BIRDS' EGGS AND NESTS

IN THE

COLLECTION OF THE

MADRAS GOVERNMENT MUSEUM

BY

S. THOMAS SATYAMURTI

BULLETIN

OF THE

MADRAS GOVERNMENT MUSEUM

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EDITED BY

THE DIRECTOR OF MUSEUMS

BIRDS' EGGS AND NESTS
IN THE
COLLECTION OF THE MADRAS GOVERNMENT MUSEUM

(WITH NOTES ON NIDIFICATION)

BY

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NEW SERIES—Natural History Section, Vol. IX, No. 1

©
GOVERNMENT OF TAMIL NADU
1979

PRINTED BY THE DIRECTOR OF STATIONERY AND
PRINTING, MADRAS, ON BEHALF OF THE
GOVERNMENT OF TAMIL NADU
1979

Price Rs. Rs. 43-95

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DESCRIPTIVE CATALOGUE OF THE EXHIBITED BIRDS' EGGS AND NESTS IN THE COLLECTION OF THE MADRAS GOVERNMENT MUSEUM.

BY

S. T. SATYAMURTI, M.A., D.SC., F.Z.S.

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INTRODUCTION.

The Zoological Section of the Madras Government Museum contains a rich collection of birds representing almost the entire avifauna of the plains (and to some extent also the hills) of South India, and from the systematic point of view it is a reasonably complete collection so far as South Indian species are concerned. A Guide book on the exhibited series of birds in the bird galleries of this Museum was published by me in 1970 to help students and lay visitors in appreciating the wealth of our avifauna and in understanding the sequence of their arrangement and classification.

Since the Madras Government Museum also possesses a rich collection of birds' eggs and many of these specimens of eggs are exhibited along with the specimens of the respective species of birds in the bird galleries of this Museum, it occurred to me that it might be helpful to bring out a descriptive catalogue of the birds' eggs and nests in the collection of this Museum—particularly of the exhibited specimens of eggs and nests — with notes on nidification, as it was felt that such information would help to supplement the material already presented in the earlier Guide book on the Bird Gallery and would prove especially useful in the study of the ecology and breeding behaviour of the birds represented in the South Indian avifauna the eggs and nests of which are exhibited in the bird galleries of this Museum. It is with this object in view that the present descriptive catalogue of the birds' eggs and nests in the collection of the Madras Government Museum has been compiled by me, although I must admit that in the preparation of this volume I have drawn freely on the information already collected and presented in standard reference works on the subject by well known ornithologists like Hume, Stuart Baker, Dillon Ripley and Salim Ali. It is mainly to present in a concise manner an account of the eggs and nests of most of the common South Indian species of birds together with information on their nidification and breeding behaviour that the present catalogue has been prepared, and it is hoped that it would cater to the needs of students and the laymen seeking such information while going round the bird galleries of this Museum.

The Madras Museum contains a collection of about 1,200 specimens of birds' eggs on the whole. Out of these only about 240 eggs are exhibited in the galleries and the remaining ones are preserved and stored as study and reference collections. Of these study collections about 237 eggs belong to the "Duckworth Collection of Birds' Eggs" acquired by this Museum some time prior to 1932. Very little information is available about this collection and there is no mention of any record of localities for these eggs. The remaining specimens of eggs in the study collection of this Museum numbering 721 eggs were valuable acquisitions made by this Museum from the late Mr. C. M. Inglis' Collection through Mrs. S. D. Inglis while she was staying at Coonoor during the years 1954 and 1955 in two conignments. The first of these acquisitions made in September 1954 consists of 190 specimens of eggs (Accession No. 1954/9) and the second of these acquisitions was made in July 1955, when a consignment of 531 specimens of birds' eggs (Accession No. 1955/16) was procured from the late Mr. C. M. Inglis' Collection left behind by Mrs. S. D. Inglis, through Lt. Col. Phythian-Adams, "Winchcombe", Kalhatti P.O., Ootacamund. Some of the specimens of eggs contained in the Duckworth Collection and in the Inglis' Collection are actually duplicates of the species represented in the exhibited series of eggs in this Museum, but many are not, and some belong to North Indian and even to foreign species.

In the present Catalogue an attempt has been made to present a descriptive account of only those eggs and nests that are exhibited in the galleries (which include mainly South Indian species) with notes on the nidification of these species. The measurements and the colours (as seen in the preserved specimens) of the eggs are also noted. As regards the

study collections, in view of their very large number it has not been found feasible to present a destailed descriptive account of all of them, especially in view of the fact that these collections include many North Indian and even foreign species. However, the lists of the eggs contained in the study collections are furnished in the Appendices, arranged as far as possible in the systematic order of the species. The eggs of the Duckworth Collection are listed in Appendix I, and the eggs of the Inglis' Collections in Appendices II and III. Locality records are available only for the eggs in the Inglis' Collections and are therefore furnished only for the eggs listed in Appendices II and III. Unfortunately locality records are not available for the eggs in the exhibited collection nor for those in the Duckworth Collection.

In the preparation of this Catalogue, I have received considerable help from Thiru P. Jawahar, Assistant Curator, Zoology Section of this Museum, especially in determining the measurements of the eggs and nest, in preparing the lists of the egg collections and in rearranging the entries in these lists in proper taxonomic sequence. I therefore wish to take this opportunity to place on record my appreciation of his help and to express my grateful thanks to him for his valuable assistance.

SYSTEMATIC LIST OF THE SPECIES OF BIRDS, THE EGGS OR NESTS OF WHICH ARE REPRESENTED IN THE EXHIBITED COLLECTION OF THE MADRAS GOVERNMENT MUSEUM.

ORDER STRUTHIONIFORMES
Family STRUTHIONIDAE
Struthio camelus Linnaeus
(The Ostrich)

ORDER CASUARIIFORMES
Family DROMAIIDAE
Dromaius novaehollandiae Gray
(The Emu)

ORDER PYGOPODES
Family PODICEPIDAE
Podiceps ruficollis capensis (Salvadori)
(The Indian Little Grebe)

ORDER CICONIIFORMES
SUBORDER ARDEAE
Family ARDEIDAE
Ardea purpurea manilensis Meyen
(The Eastern Purple Heron)

Butorides striatus chloriceps (Bonaparte)
(The Indian Little Green Heron)

Ardeola grayii grayii (Sykes)
(The Indian Pond Heron or Paddy Bird)

Egretta alba modesta (J. E. Gray)
(The Eastern Large Egret)

Nycticorax nycticorax nycticorax (Linnaeus)
(The Night Heron)

SUBORDER CICONIAE
Family CICONIIDAE

Ibis leucocephalus (Pennant)
(The Painted Stork or the Pelican Ibis)

Anastomus oscitans (Boddaert)
(The Open-billed Stork or the Shell Ibis)

Family THRESKIORNITHIDAE

Threskiornis melanocephala (Latham)
(The White Ibis)

SUBORDER PHOENICOPTERI
Family PHOENICOPTERIDAE

Phoenicopterus roseus Pallas
(The Flamingo)

ORDER ANSERIFORMES
SUBORDER ANSERES
Family ANATIDAE

Dendrocygna javanica (Horsfield)
(The Lesser or Common Whistling Teal or Tree Duck)

Sarkidiornis melanotus melanotus (Pennant)
(The Nukhta or Comb Duck)

Order FALCONIFORMES
Suborder FALCONES
Family ACCIPITRIDAE

Milvus migrans govinda Sykes
(The Common Kite or Pariah Kite)

Haliastur indus indus (Boddaert)
(The Brahminy Kite)

Astur badius dussumieri Temminck
(The Indian Shikra)

Aquila rapax vindhiana Franklin
(The Indian Tawny Eagle)

Haliaetus leucoryphus (Pallas)
(Pallas's Fishing Eagle)

Spilornis cheela albidus (Latham)
(The Crested Serpent Eagle)

Family FALCONIDAE

Falco jugger J. E. Gray
(The Laggar Falcon)

Order GALLIFORMES
Suborder GALLI
Family PHASIANIDAE

Ammoperdix griseogularis griseogularis Brandt
(The Seesee Partridge)

Francolinus francolinus melanotus Hume
(The Assam Black Partridge)

Francolinus pondicerianus interpositus Hartert
(The North Indian Grey Partridge)

Francolinus pondicerianus pondicerianus Gmelin
(The South Indian Grey Partridge)

Coturnix coturnix coturnix (Linnaeus)
(The Common or Grey Quail)

Coturnix coromandelica (Gmelin)
(The Black-breasted or Rain Quail)

Perdicula argunda (*Sykes*)
(The Rock Bush Quail)

Perdicula erythrorhyncha erythrorhyncha (Sykes)
(The Painted Bush Quail)

Galloperdix spadicea spadicea (Gmelin)
(The Red Spur Fowl)

Gallus gallus murghi Robinson and Kloss
(The Indian Red Jungle (Fowl)

Gallus sonnerati Temminck
(The Grey Jungle Fowl)

Pavo cristatus Linnaeus
(The Indian Pea Fowl)

Order GRUIFORMES

Family TURNICIDAE

Turnix suscitator taijoor (Sykes)
(The Bustard Quail)

Family GRUIDAE

Grus antigone antigone (Linnaeus)
(The Indian Sarus Crane)

Family RALLIDAE

Porzana porzana (Linnaeus)
(The Spotted Crake)

Amaurornis bicolor (Walden)
(Elwe's Crake)

Amaurornis phoenicurus phoenicurus (Pennant)
(The White-breasted Water hen)

Gallicrex cinerea cinerea (Gmelin)
(The Kora or Water Cock)

Gallinula chloropus indicus Blyth
(The Indian Moorhen)

Porphyrio porphyrio poliocephalus (Latham)
(The Indian Purple Moorhen)

Fulica atra atra Linnaeus
(The Coot)

Family OTIDIDAE

Sypheotides indica (J. F. Miller)
(The Lesser Florican or Likh)

ORDER CHARADRIIFORMES

Family JACANIDAE

Hydrophasianus chirurgus (Scopoli)
(The Pheasant-tailed Jacana)

Metopidius indicus (Latham)
(The Bronze-winged Jacana)

Family CHARADRIIDAE
Subfamily CHARADRIINAE

Vanellus indicus indicus Boddaert
(The Indian Red-wattled Lapwing)

Vanellus spinosus duvaucelii (Lesson)
(The Spur-winged Plover)

Vanellus malabaricus (Boddaert)
(The Yellow-wattled Lapwing)

Charadrius dubius curonicus Gmelin
(The European Little-winged Plover)

Family ROSTRATULIDAE

Rostratula bengalensis bengalensis (Linnaeus)
(The Painted Snipe)

Family BURHINIDAE

Burhinus oedicnemus indicus (Salvadori)
(The Indian Stone Plover)

Family CURSORIIDAE

Cursorius coromandelicus (Gmelin)
(The Indian Courser)

Family GLAREOLIDAE

Glareola lactea Temminck
(The Small Indian Pratincole or Swallow Plover)

Family LARIDAE

Hydroprogne caspia caspia (Pallas)
(The Caspian Tern)

Sterna aurantia J. E. Gray
(The Indian River Tern)

Sterna albifrons albifrons Pallas
(The Little Tern or Ternlet)

Sterna dougalli korustes (Hume)
(The Roseate or Eastern Rosy Tern)

ORDER COLUMBIFORMES
Family PTEROCLIDAE

Pterocles exustes erlangeri Temminck
(The Common Sandgrouse)

Pterocles indicus indicus (Gmelin)
(The Painted Sandgrouse)

Family COLUMBIDAE
Sub-Family TRERONINAE

Treron phoenicopterus phoenicopterus (Latham)
(The Bengal Green Pigeon)

Treron phoenicopterus chlorigaster (Blyth)
(The Southern Green Pigeon)

Columba livia intermedia Strickland
(The Indian Blue Rock Pigeon)

Streptopelia sinensis suratensis (Gmelin)
(The Indian Spotted Dove)

Streptopelia senegalensis cambayensis (Gmelin)
(The Indian Little Brown Dove)

Streptopelia decaocto decaocto (Frivaldszky)
(The Indian Ring Dove)

ORDER PSITTACIFORMES

Family PSITTACIDAE

Psittacula cyanocephala cyanocephala (Linnaeus)
(The Western Blossom-headed Paroquet)

ORDER CUCULIFORMES

Family CUCULIDAE

Clamator jacobinus jacobinus (Boddaert)
(The Pied Crested Cuckoo)

Eudynamus scolopaceus scolopaceus (Linnaeus)
(The Indian Koel)

Centropus sinensis sinesis (Stephen)
(The Southern Crow Pheasant or Coucal)

Centropus sinensis parroti (Strsemann)
(The Indian Coucal or (Crow Pheasant)

Centropus bengalensis bengalensis (Gmelin)
(The Lesser Coucal)

ORDER STRIGIFORMES

Family STRIGIDAE

Tyto alba javanica De Wurmb
(The Indian Barn Owl)

Bubo bubo bengalensis (Franklin)
(The Indian Great Horned Owl)

Bubo coromandus coromandus (Latham)
(The Dusky Horned Owl)

Glaucidium radiatum radiatum (Tickell)
(The Jungle Owlet)

Athene brama brama (Temminck)
(The Southern Spotted Owlet)

ORDER CAPRIMULGIFORMES

Family CAPRIMULGIDAE

Caprimulgus asiaticus asiaticus Latham
(The Common Indian Nightjar)

ORDER APODIFORMES

Family APODIDAE

Sub-family CHAETURINAE

Collocalia fusiphaga unicolor Hume
(The Nilgiri Swiftlet)

Sub-family APODINAE

Cypsiurus affinis (J. E. Gray)
(The Common Indian Swift)

ORDER CORACIIFORMES

Family ALCEDINIDAE

Alcedo atthis bengalensis (Gmelin)
(The Common Indian Kingfisher)

Halcyon smynensis smyrnensis (Linnaeus)
(The White-breasted Kingfisher)

Halcyon smyrnensis fusca (Boddaert)
(The Indian White-breasted Kingfisher)

Family MEROPIDAE

Merops philippinus philippinus Linnaeus
(The Blue-tailed Bee eater)

Merops viridis Linnaeus
(The Green Bee eater)

Family CORACIIDAE

Coracias indica Blanford and Oates
(The Indian Roller or Blue Jay)

Family UPUPIDAE

Upupa epops orientalis Linnaeus
(The Indian Hoopoe)

Upupa epops Linnaeus
(The European Hoopoe)

Order PICIFORMES

Family CAPITONIDAE

Megalaima zeylanica zeylanica (Gmelin)
(The Ceylon Green Barbet)

Megalaima viridis (Boddaert)
(The Small Green Barbet)

Megalaima haemacephala indica (Latham)
(The Indian Crimson-breasted Barbet)

Family PICIDAE

Subfamily PICINAE

Dinopium benghalense benghalense (Linnaeus)
(The Golden-backed Woodpecker)

Dinopium benghalense puncticolis
(The Southern Golden-backed Woodpecker)

Iynx torquilla torquilla Linnaeus
(The European Wryneck)

ORDER PASSERIFORMES

Family PITTIDAE

Pitta brachyura brachyura (Linnaeus)
(The Indian Pitta)

Family ALAUDIDAE

Alauda gulgula gulgula Franklin
(The Indian Skylark)

Galerida deva (Sykes)
(Syke's Crested Lark)

Ammomanes phoenicurus phoenicurus (Franklin)
(The Rufous-tailed Finch Lark)

Family HIRUNDINIDAE

Hirundo concolor concolor Sykes
(The Dusky Crag Martin)

Hirundo daurica nepalensis Hodgson
(Hodgson's Striated Swallow)

Hirundo tahitica domicola Jerdon
(The Nilgiri House Swallow)

Family MOTACILLIDAE

Motacilla maderaspatensis Gmelin
(The Large Pied Wagtail)

Family CAMPEHAGIDAE

Pericrocotus flammeus (Forst)
(The Orange Minivet)

Pericrocotus cinnamomeus peregrinus (Linnaeus)
(The Small Minivet)

Family PYCNONOTIDAE

Pycnonotus cafer cafer Jerdon
(The Madras Red-vented Bulbul)

Pycnonotus jocosus emeria Linnaeus
(The Bengal Red-whiskered Bulbul)

Pycnonotus jocosus fusicaudata (Gould)
(The Southern Red-Whiskered Bulbul)

Pycnonotus luteolus (Lesson)
(The White-browed Bulbul)

Hypsipetes madagascariensis ganeesa Sykes
(The Southern Indian Black Bulbul)

Family IRENIDAE

Aegithina tiphia (Linnaeus)
(The Common Iora)

Family LANIIDAE

Lanius vittatus Linnaeus
(The Bay-backed Shrike)

Lanius excubitor lahtora (Sykes)
(The Indian Grey Shrike)

Lanius scach erythronotus (Vigors)
(The Rufous-backed Shrike)

Family MUSCICAPIDAE
Subfamily TURDINAE

Turdus merula simillimus (Jerdon)
(The Nilgiri Blackbird)

Garrulax cachinnans (Jerdon)
(The Nilgiri Laughing Thrush)

Zootherea citrina Vigors
(The White-throated Ground Thrush)

Monticola cinclorhyncha (Vigors)
(The Blue-headed Rock Thrush)

Myiophoneus horsfieldi Vigors
(The Malabar Whistling Thrush)

Thamnobia fulicata Linnaeus
(The Black-backed Indian Robin)

Copsychus saularis (Linnaeus)
(The Magpie Robin)

Pratincola atrata (Linnaeus)
(The Common Pied Bush Chat)

Subfamily TIMALIINAE

Turdoides somervillei Sykes
(The Rufous-tailed Babbler)

Turdoides caudatus Dumeril
(The Common Babbler)

Turdoides subrufus Jerdon
(The Rufous Babbler)

Turdoides terricolor malabaricus (Jerdon)
(The Southern Jungle Babbler)

Turdoides affinis affinis affinis Cretzschmer
(The White-headed Babbler)

Turdoides malcolmi. (Sykes)
(The Large Grey Babbler)

Dumetia hyperythra (Franklin)
(The Rufous-bellied Babbler)

Dumetia hyperythra albogularis Franklin
(The Indian Yellow-eyed Babbler)

Subfamily SYLVIINAE

Prinia subflava inornata Sykes
(The Indian Wren Warbler)

Orthotomus sutorius sutorius Hodgson
(The Indian Tailor Bird)

Subfamily MUSCICAPINAE

Cyornis rubeculoides rubeculoides (Vigors)
(The Blue-throated Flycatcher)

Muscicapa albicaudata Jerdon
(The Nilgiri Blue Flycatcher)

Rhipidura albifrontata Franklin
(The White-browed Fantail Flycatcher)

Family PARIDAE

Parus major cinereus Vieillot
(The Indian Grey Tit)

Family DICAEIDAE

Dicaeum agile agile Cuvier
(The Thick-billed Flower Pecker)

Family NECTARINIIDAE

Arachnechthra zeylonica (Linnaeus)
(The Purple-rumped Sunbird)

Arachnechthra lotenia (Linnaeus)
(Loten's Sun bird)

Family ZOSTEROPIDAE

Zosterops palpebrosa palpebrosa (Temminck)
(The Indian White Eye)

Family ESTRILDIDAE

Subfamily VIDUINAE

Munia malacca malacca (Linnaeus)
(The Black-headed Munia)

Uroloncha punctulata punctulata (Linnaeus)
(The Spotted Munia)

Uroloncha malabarica (Linnaeus)
(The White-throated Munia)

Amandeva amandeva (Linnaeus)
(The Indian Red Munia)

Family PLOCEIDAE

Subfamily PLOCEINAE

Ploceus philippinus philippinus Cuvier
(The Weaver Bird)

Ploceus manyar flaviceps (Lesson)
(The Madras Streaked or Striated Weaver Bird)

Passer domesticus Linnaeus
(The House Sparrow)

Gymnornis xanthocollis xanthocollis Burton
(The Yellow-throated Sparrow)

Family STURNIDAE

Sturnia malabaricus malabaricus Linnaeus
(The Grey-headed Myna)

Sturnus pagodorum Linnaeus
(The Black-headed Myna)

Acridotheres tristis tristis (Linnaeus)
(The Common Myna)

Acridotheres ginginiatus (Latham)
(The Bank Myna)

Acridotheres fuscus fuscus (Wagler)
(The Jungle Myna)

Sturnopastor contra (Linnaeus)
(The Pied Myna)

Family ORIOLIDAE

Oriolus oriolus kundoo Sykes
(The Indian Oriole)

Family DICRURIDAE

Dicrurus coerulescens coerulescens (Linnaeus)
(The White-bellied Drongo)

Dicrurus leucophaeus longicaudata (A. Hay)
(The Indian Ashy or Grey Drongo)

Dicrurus aeneus aeneus Vieillot
(The Northern Bronzed Drongo)

Dicrurus paradiseus paradiseus Vieillot
(The Larger Racket-tailed Drongo)

Dicrurus ater (Hermann)
(The Black Drongo)

Family CORVIDAE

Corvus splendens splendens Vieillot
(The Common Indian House Crow)

Corvus coronoides levaillanti (Lesson)
(The Indian Jungle Crow)

Dendrocitta rufa rufa (Scopoli)
(The Indian Tree Pie)

Dendrocitta rufa vagabunda (Latham)
(The Bengal Tree Pie)

SYSTEMATIC DESCRIPTIONS OF THE EXHIBITED BIRDS' EGGS AND NESTS IN THE MADRAS GOVERNMENT MUSEUM (WITH NOTES ON NIDIFICATION).

ORDER STRUTHIONIFORMES

Family STRUTHIONIDAE

Struthio camelus Linnaeus.

(The Ostrich).

The Ostrich or "Camel Bird" of North Africa is the largest of living birds. Its distribution extends from Barbary to Arabia and even to Mesopotamia. Ostriches are polygamous, each male being accompanied by several hens. A typical family party consists of a cock and three hens. Each hen may lay up to six to eight eggs. The hens belonging to one cock deposit their eggs in a common nest which consists of a shallow excavation in sandy soil. The cock as well as the hens share in the duties of the nest and in incubating the eggs. The incubation lasts from five to six weeks. Towards the end of incubation, the eggs are rolled into hollows on the periphery of the nest. This helps to synchronise hatching.

Towards the beginning of the breeding season the cock exhibits courtship display by squatting on the ground rocking from side to side and expanding its white wing plumes ; the blood-red gape is believed to act as a threat signal.

The egg of the Ostrich is the largest egg laid by any living species of bird. The eggs are creamy white and are nearly spherical, rather longer than broad, with a pitted surface. They measure about 150 mm. x 125 mm., and show considerable diversity in size, pitting of the surface and in the glossiness of the surface. Normally, the surface is fairly glossy.

Specimens in the collection.—Three specimens of Ostrich eggs are represented in the collection, of which one is exhibited in the Foreign Animals Gallery along with the mounted specimen of the Ostrich and the other two smaller ones are contained in the study collection. Their measurements and colours are noted below :—

(i) Exhibited in the gallery :
Length : 170 mm.
Breadth : 137 mm.
Colour : Whitish cream-coloured ; surface pitted.

(ii) Study collection :
Length : 165 mm.
Breadth : 130 mm.
Colour : Pale yellowish, with brown spots ; slightly pitted surface.

(iii) Study collection :
Length : 160 mm.
Breadth : 129 mm.
Colour : Creamy yellow, surface pitted.

All the three eggs are fairly glossy.

ORDER CASUARIIFORMES

Family DROMAIIDAE

Dromaius novaehollandiae Gray.

(The Emu).

The Emu is the most widespread of the flightless ratite birds of Australia occurring all over the continent. In general, the habits of the Emus are not unlike those of the Cassowaries, but they inhabit sandy plains or open forests and are invariably monogamous, though they may be seen in small parties after breeding. The Emu is the second largest of the living ratite birds and is surpassed in size only by the Ostrich.

The nest is generally a mere hollow scraped in the ground, with or without a surrounding ring of grass or plant-stems or a mound of pieces of bark raised to a height of about three inches. The nest contains a clutch of about eight to ten (sometimes even from seven to sixteen in number) eggs. The nest is placed under a tree or bush and consists of a flat bed of grasses, bark and leaves. The eggs are of a dark, or occasionally light, green colour, with the surface covered with granulations which give it the appearance of shagreen. The egg shell is thick and can be used effectively for carving with the hand, producing a cameo-like finish. The cock alone performs the incubation and cares for the young ones. The incubation period extends for 58 to 61 days. Egg-laying takes place during autumn. The eggs of this species represented in the Museum collection were acquired from the Madras Zoo. The average size of the egg is 5¼ inches x 3½ inches.

Specimens in the collection. Two eggs are represented in the Museum collection, one of which is exhibited in the Foreign Animals Gallery along with the specimen of the Cassowary, and the other is contained in the study collection. Their measurements and colours are noted below :

(i) Exhibited specimen—

Length : 134 mm.
Breadth : 93 mm.

Colour : Brownish, with cream-coloured spots ; surface coarse-texturned. The egg is apparently faded or discoloured.

(ii) Specimen in the study collection—

Length : 120 mm.
Breadth : 83 mm.

Colour : Blackish, with greyish spots and markings ; surface pitted and coarse ; somewhat glossy.

ORDER PYGOPODES

Family PODICEPIDAE

Podiceps ruficollis capensis (Salvadori).

(The Indian Little Grebe).

The Indian Little Grebe breeds in Ceylon during January and December, and again in June. In South India, the usual breeding season appears to be May and June whilst in Northern India, Assam and Burma, the favourite months seem to be August and September. These birds usually select ponds and puddles infested with weeds for making their nests ; small village tanks and ponds are common sites for their nests, but the most common breeding places are fairlry large stretches of weed-covered water in swamps more or less surrendered by reeds. Sometimes they breed gregariously in small colonies. Such colonies are found in the Nilgiris, in the Manchar Lake and a few other places. For the most part, however, they make their nests singly and each pair of birds has its own domain, though this may be small where the birds are numerous.

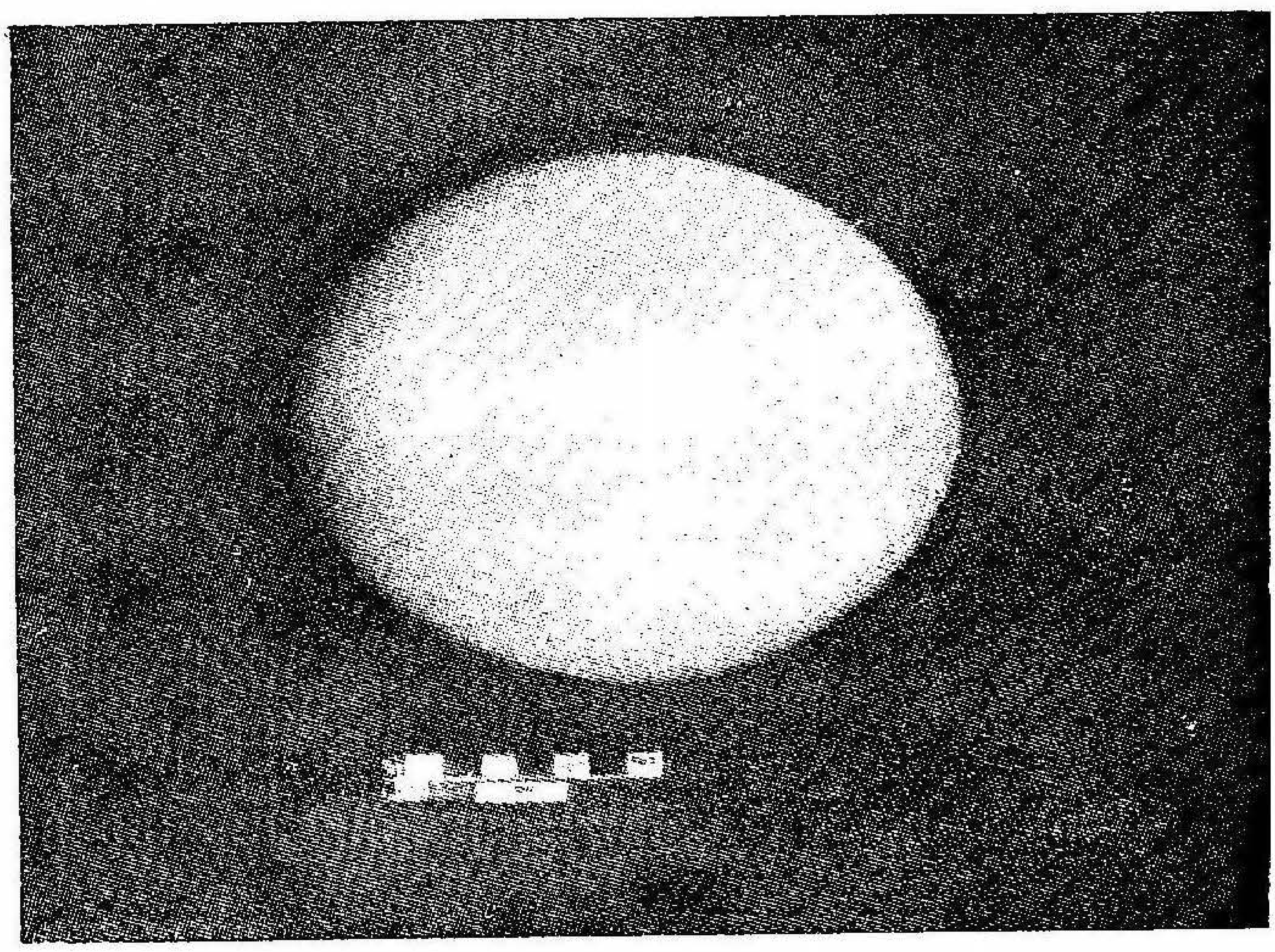

Figure 1. **Struthio camelus** Linnaeus
(The Ostrich)

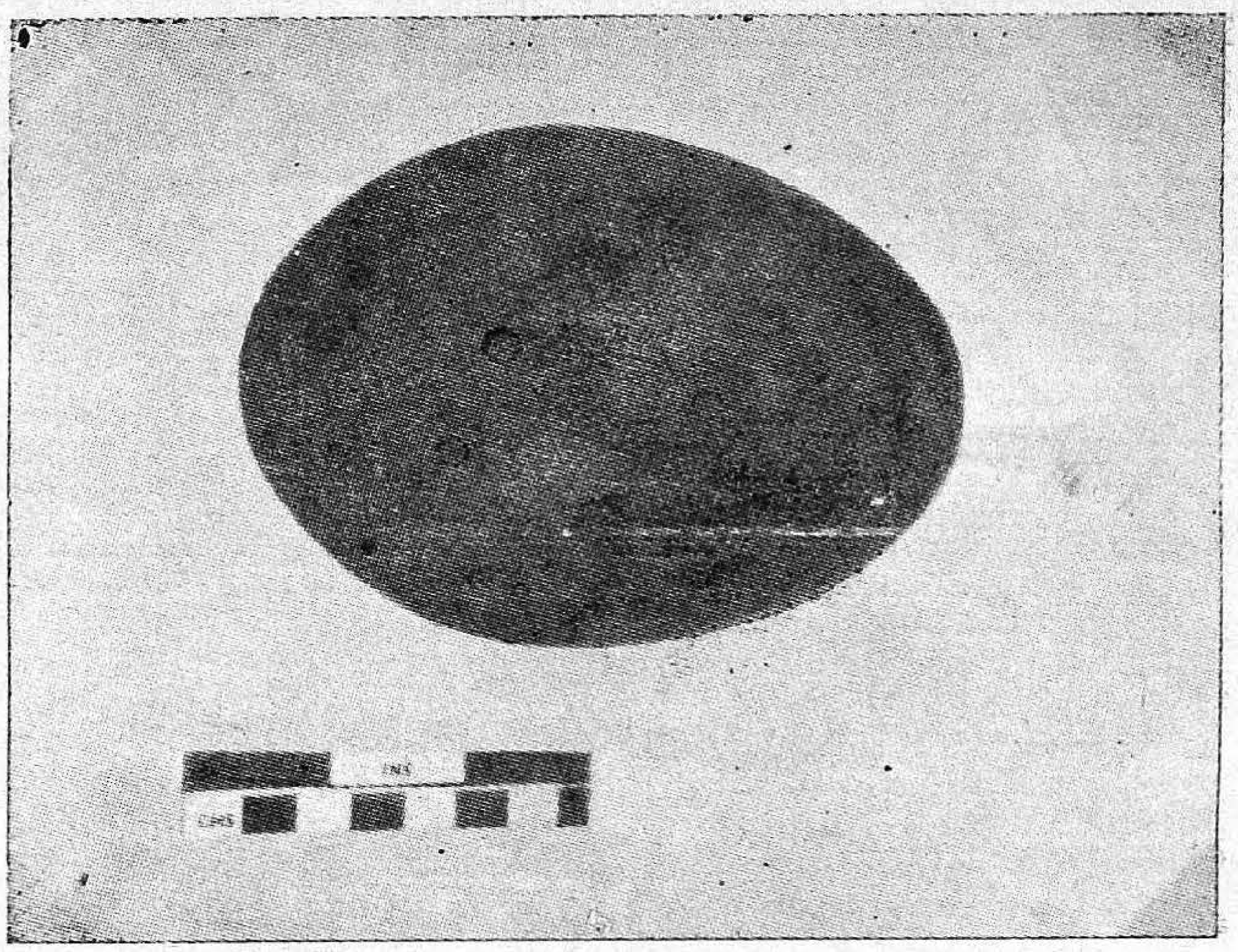

Figure 2. **Dromaius novaehollandiae Gray**
(The Emu)

The nest is very crude and consists of a little pad of weeds, supported by growing weeds, lotus and lily plants, often half-submerged and nearly always soaking wet. The nest is never placed in quite open water ; in case it is so placed, it soon sinks or is driven ashore by the wind. Both male and female take part in the incubation and both sit when the nest is large enough. When they leave the eggs, they always carefully cover them with more wet weeds.

The eggs number three to five, but six and even seven are not uncommon. In appearance, they are miniatures of those of the Crested Grebe, and like them, they are pure white when first laid, but soon become stained and brown, sometimes to a dark mahagony colour.

Specimens in the collection :

Two eggs : (i) Length : 34 mm.
Breadth : 23 mm.
Colour : White, with yellowish brown tinge.

(ii) Length : 35 mm.
Breadth : 25 mm.
Colour : White, with creamy brown tinge.

ORDER CICONIIFORMES

Family ARDEIDAE

Ardea purpurea manilensis Meyen.

(The Eastern Purple Heron).

The Eastern Purple Heron occurs throughout the plains of India east to Assam and Manipur, Pakistan, Bangala Desh, Nepal, Ceylon and Andaman Islands, as a resident and local mig ant. In winter its numbers are greatly i c eated by the influx of migrants from northern regions. It frequents jheels, reedy swamps, lakes and rivers.

The breeding season varies in different regions ; in North India it breeds from June to September or October, and in South India and Ceylon, from November to March. This species breeds generally in small colonies of its own, wherever there are swamps and lakes with reed-covered shores, sometimes nesting on the broken-down reeds and sometimes on trees close to, or partly submerged by, water. When breeding in mixed heronries along with other species, the Eastern Purple Heron shows a tendency to segregate into small colonies of its own. The nest consists of a massive platform of sticks and branches or rush stems and is built on trees, dense reed beds, or screw pine (*Pandanus*) tangles standing in fairly deep water, from a few centimetres to two or three metres above the surface of the water. The reeds and rushes or the leaves of *Pandanus* are often broken down by the birds to form a platform for the nest. The nest is often lined with a little grass or rush leaves, but occasionally it is without any lining.

The eggs number three to five, rarely six, and are pale sea green or greenish blue in colour. The eggs of this species closely resemble those of the Eastern Grey Heron, *Ardea cinerea rectirostris* but, as a whole, they are considerably more pointed and paler coloured than those of that species. Typically they are nearly perfect, moderately broad to long ovals and the shell is firm, rather coarse and entirely glossless. The surface of the shell is set all over with extremely minute pores which are generally either white or filled with a whitish material, probably the desiccated droppings of the bird. The shell is close and smooth-textured.

The eggs vary in length from 50·0 mm. to 62·0 mm. and in breadth from 36·0 mm. to 44·5 mm.; the average size of 100 eggs is 54·6 mm. x 39·7 mm. (Baker).

Specimens in the collection :

One egg : Length : 56·0 mm.
Breadth : 39 mm.
Colour : Dull white (faded).

Butorides striatus chloriceps (Bonaparte).

[= *Butorides striatus javanicus* (Horsfield].

(The Indian Little Green Heron).

This is a resident species found rather thinly distributed throughout India, from Sind (in West Pakistan) to Eastern Assam and Manipur. It also occurs in Ceylon and the Laccadive Islands. It breeds practically all over the country on the banks of canals and streams overshadowed with trees where it lurks during the heat of the day in low bushes and clumps of rushes or leafy branches overhanging the water; such situations form the favourite haunts of these birds. The breeding season is from March to September over a greater part of the subcontinent, but varies locally with the availability of water.

The nest consists of a small platform of twigs with a depression in the centre for the eggs, without any lining. The nest is usually well concealed and is built singly and it not colonially or in mixed heronries, though occasionally several nests may be found together. Normally the nest is placed at a height of about 3 to 4·5 metres up in a small tree in a mangrove swamp or in a tree concealed among bushes or the edge of a stream or pond. Occasionally the nests are placed in trees near villages.

The eggs resemble those of the Pond Heron closely ; they are usually 3 to 5 in number and are very uniform in shape and size, moderately broad, often slightly cylindrical ovals, normally quite symmetrical and obtuse at both ends. Occasionally an egg may show a tendency to be pointed at one or both ends. The egg shell is smooth, fine-textured, compact and not glossy, and is of a uniform pale sea green colour like those of the Pond Heron. Held up against the light, the egg shell is of an extremely bright sap green colour. The eggs are, on the average, of a larger size than those of the Pond Heron.

The eggs vary in length from 35·6 mm. to 41·7 mm. and in breadth from 27·4 mm. to 31·2 mm. The average size of 40 eggs is 39·5 mm. ×29·7 mm. (Baker).

Specimens in the collection:

One egg : Length : 38 mm.
Breadth : 30 mm.
Colour : Dull white (faded).

Ardeola grayii grayii (Sykes).

(The Indian Pond Heron of Paddy Bird.)

The Pond Heron is a resident bird occurring throughout India, Pakistan and Ceylon and also in the Andamans, Nicobar and Laccadive Islands. It is found wherever there is any water, pond, tank or swamp and migrates locally with drought and flood conditions. It ascends up to 1,200 metres in the Peninsular Hills and up to about 1,500 metres in the Kashmir and Nepal Valleys. It frequents streams, jheels, marshes, inundated paddy fields, village tanks and even small puddles and ditches and tidal mudflats.

The Pond Heron is one of the commonest and most familiar water-loving birds in India and breeds usually in small groups or colonies of its own species or often also in company with other species such as night herons, egrets, cormorants, etc. The breeding season in most parts of India is from May to September; in South India and Ceylon it lasts from November to February and in Ceylon it extends to August.

Most nests are found on trees such as Mango, Tamarind, pepul, etc., at some height from the ground. The nest is generally an untidy structure composed of twigs and is usually built in isolated large trees or in clumps of bamboos, often growing in the midst of a town or village and not necessarily close to water. Rarely the nests are built in beds of reeds. The nests are rough collections of twigs and sticks put together untidily and without any lining Occasionally the colonies of nests are placed in trees standing in water, the nests being about two to four metres above the surface of the water.

The eggs are three to five in number, smooth and fine-textured. Typically, the eggs are slightly elongated, broad ovals, generally perceptibly pointed at one end and not infrequently at both ends. They are a pale sea-green or greenish blue in colour, and are decidedly darker than the eggs of the Cattle Egret. When fresh, these eggs are darker and more greenish as a whole than those of any of the other small species of Herons. In most egg collections, the eggs of this species are usually seen mixed up with those of other species of Herons owing to the habit of numerous species breeding together in colonies on the same trees or even on the same branches.

The eggs vary in length from 34·3 mm. to 41·1 mm., and in breadth from 27·9 mm. to 31·8 mm. The average size of 100 eggs is 38·0 mm × 28·5 mm. (Baker).

Specimens in the collection.

One egg : Length : 40 mm.
Breadth : 31 mm.
Colour : White (faded).

Egretta alba modesta (J. E. Gray).

(The Eastern Large Egret).

The Eastern Large Egret occurs throughout India, Pakistan, Bangla Desh, Ceylon, the Nepal Valley and the Maldive Islands in winter. Eastwards its distribution extends through the Malay Archipelago to Australia. However, it has not been recorded from the Andamans, Nicobar and Laccadive Islands. Birds of this species usually frequent jheels and marshes, rivers, tidal estuaries, etc.

The breeding season extends from July to September in Sind and North India and from November to February or March in Southern India and December to May in Ceylon. This species is colonial and breeds in mixed heronries along with species of storks, darters, cormorants and smaller species of egrets. They breed in small colonies, sometimes having their nests in little clusters together but more often scattered here and there among the other breeding birds.

The nest is a flimsy platform composed of twigs and sticks, sometimes lined with rushes and sometimes not. The nests are about 25 to 35 centimetres in diameter and seemingly too small for the bird, and are built in trees of medium to large size, standing by themselves or in a grove, either partially submerged or on raised ground away from water. The nests may even be found on peepul or tamarind trees in the midst of noisy towns and villages, and are often scattered amongst those of other species, without appearing to be segregated.

The eggs are three or four in number and are smaller, but otherwise identical with those of the Grey Heron. They are exactly similar in the texture of their shell and colour to those of the Purple Heron, being pale sea green or bluish green in colour, but they are on the whole perhaps more elongated in shape than those of the Grey Heron or Purple Heron, besides being smaller.

The eggs vary in length from 47·8 mm. to 60·5 mm. and in breadth from 35·6 mm. to 40·6 mm. The average size of sixty eggs is reported to be 54·0 mm. × 38·6 mm. (Baker)

Specimens in the collection :

One egg : Length : 55 mm.
Breadth : 41 mm.
Colour : White (faded).

Nycticorax nycticorax nycticorax (Linnaeus).

[= Nycticorax griseus (Linnaeus)].

(The Night Heron.)

This is a resident species, rather patchily distributed and locally migrating, depending upon the availability of water. This species occurs throughout India, wherever there is sufficient water. In Kashmir and Nepal valleys it is found up to an altitude of 1900 metres in spring and summer and moves southwards in winter. It also occurs in Ceylon, Andaman and Nicobar Islands, but it has not been recorded from the Maldive or Laccadive Archipelagoes. These birds generally frequent jheels, ponds and streams as well as lakes, estuaries. tidal creeks and backwaters and are crepescular and nocturnal in their habits, nesting, gregariously in colonies composed of a few dozens to several hundreds of birds.

The Night Heron breeds over the greater part of India from June or July to September but in Kashmir they lay as early as April, and in Ceylon, most birds breed in March. They nest in large colonies, sometimes in company with other species of herons, but more often in colonies of their own, segregated from others.

The nests are well made, but rather rough and untidy platforms of twigs and sticks often roughly lined with smaller twigs and leaves. The nests are placed in trees of considerable height in gardens and in the middle of villages or in *Pandanus* bushes standing in or near water or in trees found in groves or orchards on dry land.

The eggs are three or four in number, rarely five, and are typical of the family, being longish ovals and pale blue-green in colour. Typically, they are rathe obtuse at both ends, but many are decidedly pointed, and some are more or less pyriform towards one end. The colour is a delicate pale sea-green but some eggs, when fresh, are a decidedly bright, though light, green, and occassionally an egg is seen with such pale colour that it is almost greenish white.

The eggs vary in length from 42·7 mm. to 52·3 mm. and in breadth from 33·0 mm. to 36·8 mm., but the average of 50 eggs is reported to be 49·0 mm. × 35·1 mm. (Baker)

Specimens in the collection :

Two nests and four eggs.

Nests : (with four eggs and one sitting adult)
Length : 410 mm.
Breadth : 380 mm.
Height : 180 mm.

(ii) (with three young birds) ;
Length : 410 mm.
Breadth : 380 mm.
Height : 180 mm.

Eggs : (i) Length : 48 mm.
Breadth : 34 mm.
Colour : Pale greenish white.

(ii) Length : 46 mm.
Breadth : 36 mm.
Colour : Pale greenish white.

(iii) Length : 52 mm.
Breadth : 38 mm.
Colour : Pale greenish white.

(iv) Length : 46 mm.
Breadth : 34 mm.
Colour : Dull greenish white.

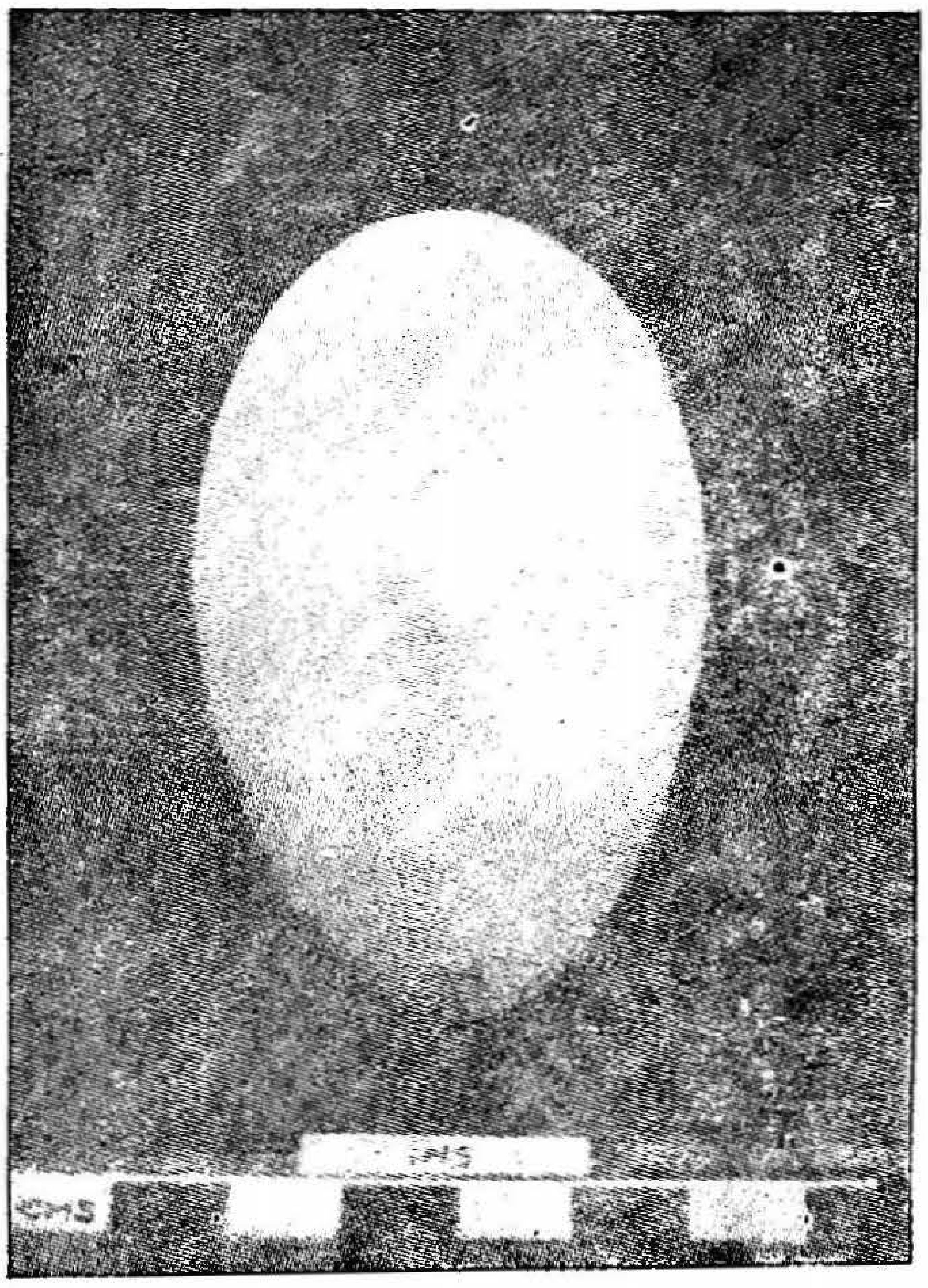

Figure 4. **Ibis leucocephalus** (Pennant)
(The Painted Stork)

SUBORDER CICONIAE.

Family CICONIIDAE.

Ibis leucocephalus (Pennant).

(=**Tantalus leucocephalus** Pennant).

(The Painted Stork or the Pelican Ibis.)

The Painted Stork is widely distributed throughout the Plains of India, Pakistan, Bangla Desh, Nepal, Terai and Ceylon, and is a resident species, migrating locally depending on the availability of water. It is not recorded in the Andamans. This species is a very familiar Indian bird common everywhere where there are marshes, ponds or lakes ; it specially frequents inland marshes, inundated fields and occassionally river banks. It is normally met with in pairs or in small parties, but during the breeding season it is gregarious and breeds in enormous colonies numbering several thousands of individuals which often collect at favourite heronries. It is therefore colonial and sometimes several thousand pairs are found together in mixed heronries. The breeding season is variable depending on the monsoon. Normally it lasts from August to October in North India, November to March in South India and March to April in Ceylon. This species nearly always breeds in company with numerous other species of Storkes, Herons, Cormorants, etc.

The nest consists of a large stick platform with a shallow central depression sparsely lined with leaves, straw and waterweeds. The nests are usually flimsy and ill-made structures ; many nests are built in the same tree quite close together. The nests are generally built in large or medium-sized trees standing in water such as the Babool (*Acacia arabica*) and are crowded together, in company with those of other species such as herons and cormorants. Throughout the period when the nests are occupied, leafy twigs or green water vines are added to the nests from time to time. There is little or no lining, the eggs being often deposited directly on the twigs of which the nest is composed.

The eggs are two to five in number, occasionally six, but most commonly three or four and are generally dull white, sometimes sparsely spotted and streaked with brown. The eggs vary much in size and somewhat in shape too. They are typically elongated ovals, greatly compressed towards one end. Some eggs are somewhat pyriform, but others are perfect ovals. The shell is rather fine and compact, of a dull white colour, much stained and soiled as incubation proceeds, and occasionally with a few dingy brown spots and streaks. They are entirely devoid of gloss. In some cases they have a very faint greenish tinge, which fades soon after the egg has been blown.

The eggs vary in length from 65·5 mm. to 74·9 mm. and in breadth from 44·5 mm. to 50·2 mm. The average size of 50 eggs is reported to be 69·5 mm. × 49·0 mm. (Baker).

Specimens in the collection :—

One egg : Length : 74 mm.
Breadth : 48 mm.
Colour : White (faded).

Anastomus oscitans (Boddaert).

(The Open-billed Stork or the Shell Ibis.)

The Open-bill Stork is found all over India, Pakistan, Bangla Desh, Nepal (Terai) and Ceylon as a resident species, but migrating locally depending on the availability of water. Apart from this they exhibit regular migratory movements especially during dark nights in the later monsoon months (August-September). This species frequents inland waters such as jheels, ponds and marshes, etc., but they occur rarely on river banks and tidal mud flats also.

The Open bill breeds in large colonies in mixed heronries, sometimes composed of several thousands of pairs. The breeding season lasts from July to September in North India, November to March in South India and December to April in Ceylon ; the breeding

is dependent on the monsoon and availability of water, and in years of drought, the breeding may be skipped altogether. Although they associate in large colonies, in mixed heronries they keep aloof from other birds ; sometimes they breed with the Painted Stork and various species of Herons, but even then they seldom build their nests in the same trees along with them.

The nests are large, rough, circular pads of twigs and sticks with a central depression lined with leaves, etc. The nests are often used for several years, when they become very large, and are placed on trees standing close to, or actually in water ; the nests are generally built in such trees as *Acacia*, *Prosopis* or *Barringtonia* standing partially submerged in a jheel or depressions filled by rain in the monsoon. Occasionally the nests may be on trees on the edge of a tank in or close to villages. There are many nests in a tree, closely crowded together along with the nests of darters, cormorants, egrets, etc., but with a marked tendency towards segregation.

The eggs are two to four or rarely five in number. They are typically broad to moderate ovals, but slightly compressed towards the smaller end ; but narrow, elongated and pointed as well as pyriform varieties also occur. In texture, the egg shell is very close and satiny, being perceptibly smoother to the touch than those of the Spoonbill and the White Ibis or the Heron. The eggs, when freshly laid, are a sort of ceremy or sullied white, entirely free from markings of any kind, but as indubation proceeds they become dirty earth-coloured or yellowish brown.

The eggs vary in length from 50·8 mm. to 64·0 mm. and in breadth from 37·6 mm. to 44·2 mm. The average size of 100 eggs is reported to be 57·9 mm. x 41·2 mm. (Baker).

Specimens in the collection :—

One egg : Length : 56 mm.
Breadth : 42 mm.
Colour : Creamy white.

Threskiornis melanocephala (Latham).

(= **Ibis melanocephalus** Latham).

(= **Tantalus melanocephalus** Latham).

(The White Ibis.).

The White Ibis is widely distributed and occurs throughout India, Pakistan, Bangla Desh, Nepal Terai and Ceylon. It occurs as a resident species in the plains and in the plataeux, and is locally migratory, depending on the availability of water. It frequents rivers, jheels, marshes and inundated ploughed fields and fallow land and occasionally also tidal mudflats and lagoons.

In North India the breeding season lasts from June or July to October, varying with early or late monsoon and the filling up of the tanks and jheels ; in South India and Ceylon the breeding season extends from November to February or March.

These birds build their nests in colonies on trees, generally half a dozen to a dozen pairs being found in each colony, but sometimes even hundred nests are found together in one colony.

The nests are rather small in size being about 18 to 24 inches in diameter, but are fairly deep in proportion to their width. The nest consists of a smallish platform of sticks about 25 to 30 centimetres across, usually unlined, built in moderate-sized trees standing in or near water, or on the tops of partially submerged shrubs such as those of *Zizyphus*. The nests are built close together actually touching or almost touching each other. Sometimes the nests are placed on trees on the outskirts of villages.

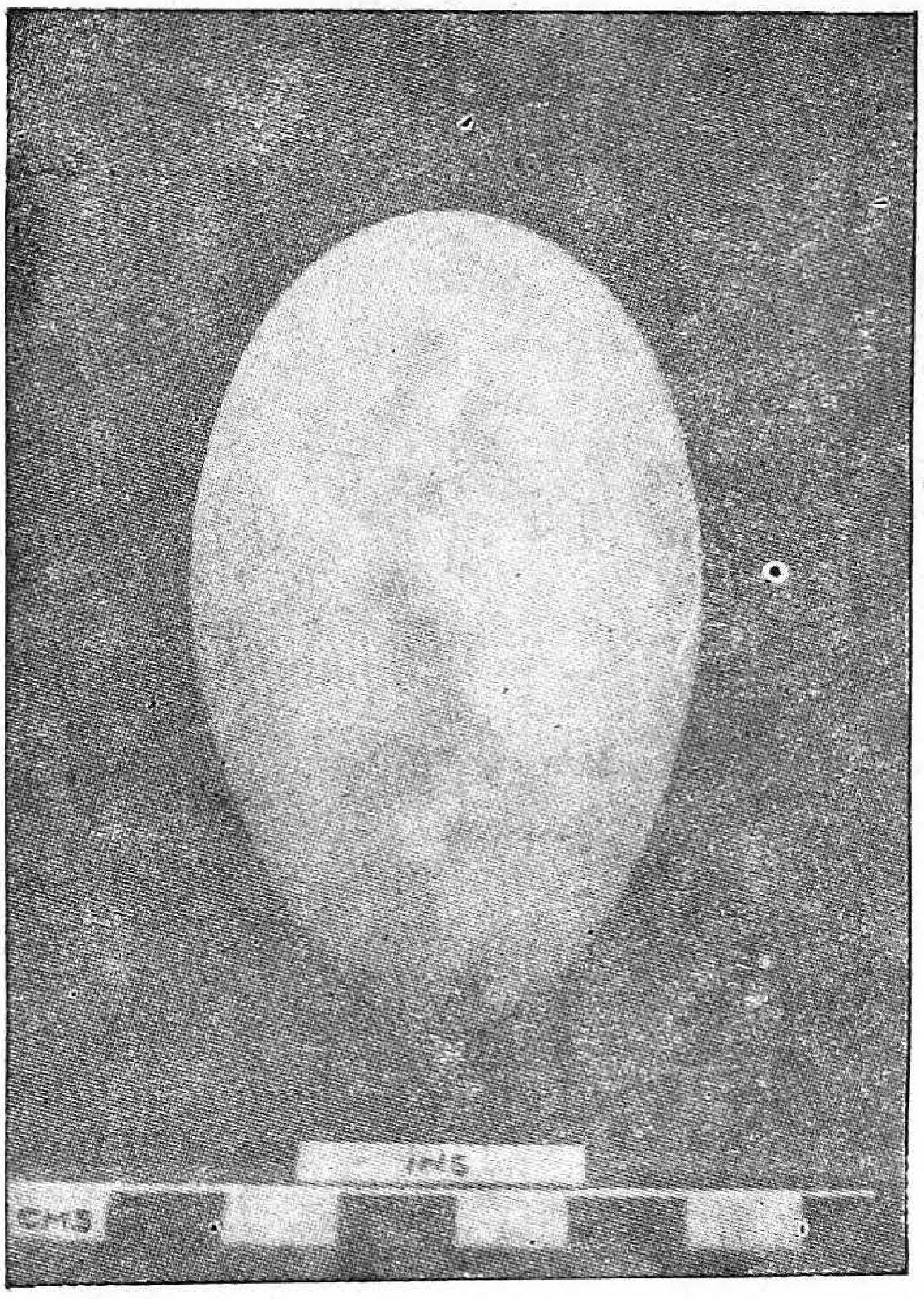

Figure 4. **Ibis leucocephalus** (Pennant)
(The Painted Stork)

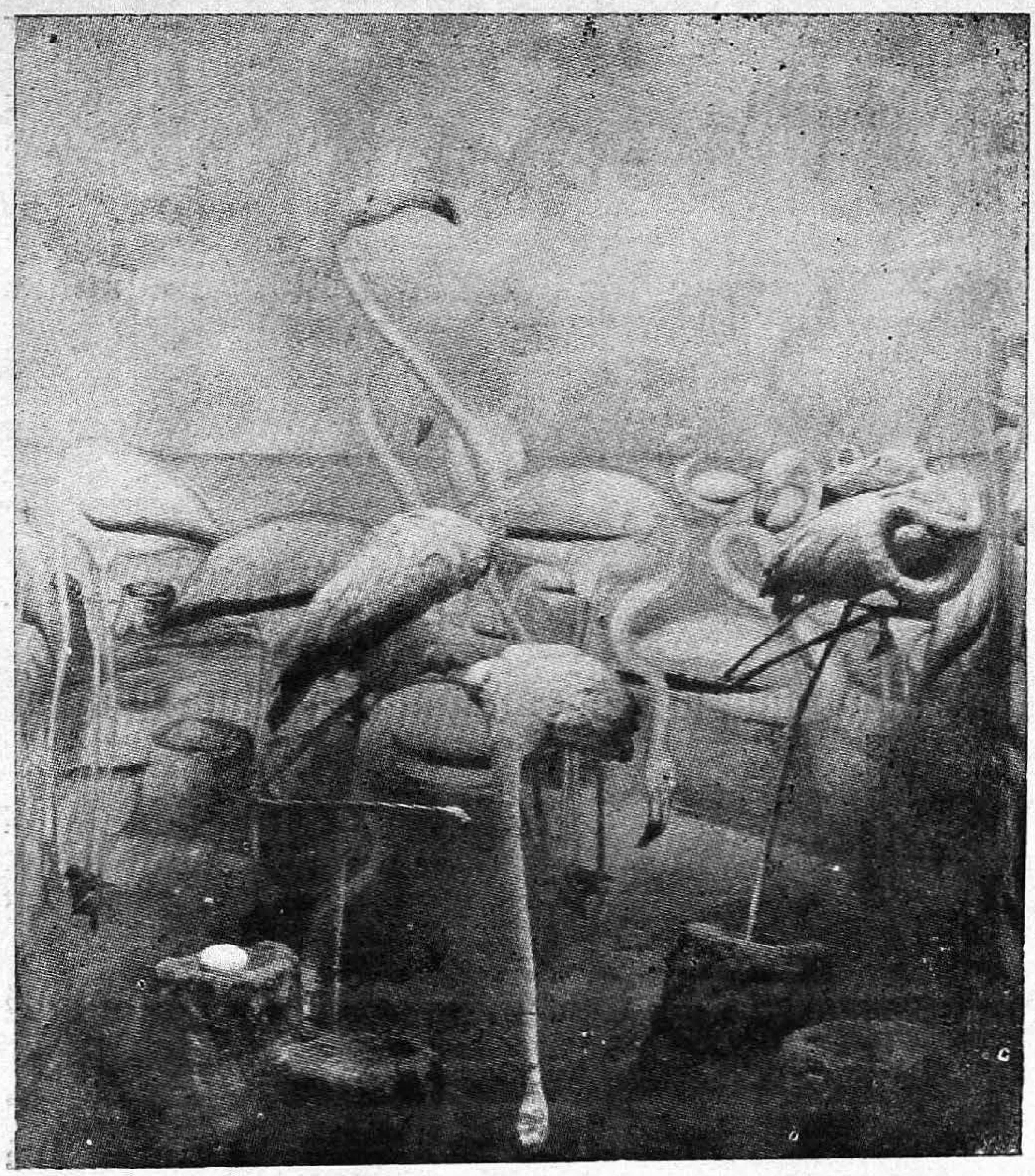

Figure 5. **Phoenicopterus roseus** Pallas
(The Flamingo ; Nesting colony with mud nests and egg)

The eggs are two to four in number, most often three ; typically, they are long ovals much pointed towards one end. However, there is considerable variation in their shaped some are nearly perfect ovals, while some are pointed at both ends like a Cormorant's egg, and some are pyriform. The eggs have a smooth surface and are chalky white, with a faint bluish tinge ; they are mostly immaculate, but some are sparingly marked with small spots and blotches of light or dark brown, more densely at the broad end. When freshly laid, the eggs are of a delicate bluish or greenish white, but during incubation the blue or green tint fades and disappears and the white gets soiled and stained till they are mostly brown and dirty.

The eggs very in length from 53·3 mm. to 71·6 mm., and in breadth from 38·1 mm. to 46·2 mm. The average size of 150 eggs is reported to be 63·5 mm. × 43·1 mm. (Baker).

Specimens in the collection:—

One egg : Length : 66 mm.
Breadth : 45 mm.
Colour : Chalky white.

SUB-ORDER PHOENICOPTERI.

Family PHOENICOPTERIDAE.

Phoenicopterus roseus Pallas.

[=**Phoenicopterus ruber antiquorum** (Temminck).]

The Flamingo is widely distributed and occurs over an extensive area including Southern France, Southern Spain, parts of Africa, the Middle East and Caspian Region to West Siberia and southwards through Afgahnistan. In India it occurs sporadically here and there throughout the country (although rare in Bengal and Assam) and also in Pakistan, Bangla Desh and Ceylon. It is not recorded from Nepal. The Famingo is gregarious and occurs normally in small or large flocks at favourite feeding and nesting grounds often numbering many hundred thousand individuals. It generally frequents large jheels, brackish water lakes and lagoons, salt marshes, estuaries and tidal mudflats on the sea coast.

Within Indian limits, the Great Rann of Kutch is the only known nesting ground where vast congregations of Flamingos breed gregariously. The breeding season is variable, depending on the availability of water and extends from September or October to March or April.

The nest is a truncated conical mound of wet mud (which becomes very hard when dry), with a shallow, pan-like depression at the top. The nests vary greatly in size measuring from a few centimetres to half a metre in height. They are placed sometimes in groups but sometimes much scattered, on ground which is slightly raised above the surrounding flooded areas, although their bases may be actually in the water. The nest is made of sun-baked mud scraped up from the vicinity when in semi-fluid state. The nests are built in hundreds close to one another and literally extend over several acres forming a compact, expansive 'flamingo city.' Sometimes, instead of the usual truncated cone of mud, a merely slightly raised bed of mud pellets constitutes the nest.

The eggs are normally one, or occasionally two, in each nest and appear like huge eggs of Cormorants. They vary in colour from a pale skim-milk colour to pale blue ; the egg shell is overlaid with a dense calcium deposit which soon becomes stained, pure white when fresh.

The average size of one hundred eggs (measured by Jourdain) is reported to be 88·8 mm. × 54·5 mm. (Baker).

Specimens in the collection :—

One egg : Length : 84 mm.
Breadth : 55 mm.
Colour : White (somewhat faded).

ORDER ANSERIFORMES.

SUBORDER ANSERES.

Family ANATIDAE.

Dendrocygna javanica (Horsfield)

(=**Anas javanica** Horsfield).

(The Lesser or Common Whistling Teal or Tree Duck).

The Lesser or Common Whistling Teal is a resident species occurring throughout India, Andamans and Nicobar Islands, Pakistan, Bangala Desh, Nepal (Terai) and Ceylon, and moving about locally depending upon conditions of drought and floods. It is also a partial local migrant.

The overall breeding season in India extends from June to October, thus coinciding more or less with the South West monsoon but varying locally with early or late monsoon according to the prevailing water conditions. In Ceylon the breeding season is chiefly from December—January to July—August.

The nest is made of twigs and grass and placed in natural hollows in old trees or built at moderate heights in the fork of large branches sometimes well away from water. Old and deserted nests of kites, herons and crows are frequently utilized. Some birds select large hollows in trees while others make nests composed of thick substantial pads of leaves rushes and grasses on the ground among cane-brakes or reed beds in swamps, while yet others make a comfortable grass nest on the ground in grass and vegetation near or in swamps or else on the banks which divide the rice fields from one another. The nests are usually unlined with down, but occasionally a few odd feathers may be used as lining for the nest.

The eggs are normally seven to twelve in number, but may rarely exceed twelve, the maximum number recorded being seventeen. Most commonly ten eggs are found in a clutch. The eggs are usually very broad, obtuse ovals, often slightly compressed towards one end. In texture, they are fine and smooth, but differ much from those of the Comb Duck and the Teal Goose in that they lack the exquisite smoothness and satiny feel of these latter. The egg shell is thick, with an inner membrane of lemon-yellow. When first laid they are pure ivory-white and smooth, but become stained yellowish or brownish and sullied during incubation. As a rule the eggs are not glossy, although occasionally they may exhibit a slight gloss.

The eggs vary in length from 43.7 mm. to 50·8 mm. and in breadth from 35·6 mm. to 40·6 mm. The average size of 100 eggs is reported to be 46.9 mm. × 36·8 mm. (Baker).

Specimens in the collection :—

One egg.—Length—50 mm.
Breadth—38 mm.
Colour—White.

Sarkidiornis melanotus melanotus (Pennant).

(=**Anser melanotus** Pennant).

(The Nukhta or Comb Duck).

The Nukhta or Comb Duck is a resident species of duck occurring practically all over India, Pakistan and Bangla Desh and extending east to Assam and south to Mysore, and migrating locally according to water conditions. It is not recorded in Nepal, and although formerly sparsely reported from Ceylon, it is now believed to be extinct there. It occurs wherever there is plenty of water and frequents reedy tanks and jheels in well wooded plains country.

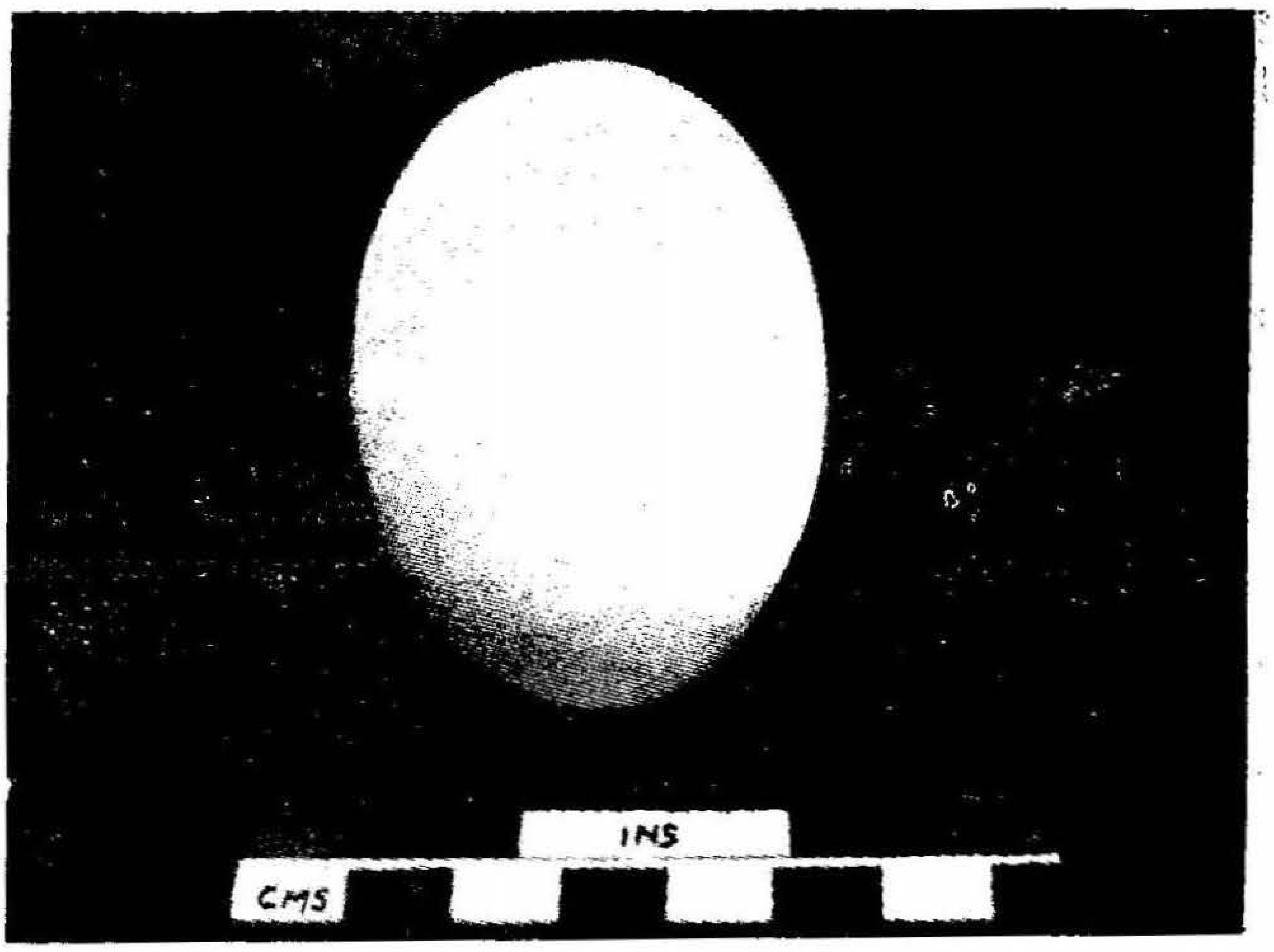

Figure 6. **Sarkidiornis melanotus melanotus** (Pennant)
(The Nukhta or Comb Duck)

The Comb Duck breeds wherever it occurs during the South West Monsoon, namely, from July to September. Normally the nesting site is a large, natural hollow in some tree at moderate height, standing in or close to water, sometimes at a considerable distance away from water. The egss are either laid on the bare wood or on a rough nest of sticks, grass and leaves. The nest is generally unlined and no down feathers appear ever to be used as a lining, but sometimes it may be scantily lined with dry leaves, grass and ordinary feathers. Sometimes a hollow is selected for the nest, where the main branches spring from the trunk. Occasionally it nests in holes in old fort walls and earth cliffs and banks or more rarely, the old nest of a vulture or a stork is used for nesting.

The eggs are normally about seven to fifteen in number, but Anderson is reported to have once found forty eggs in a nest and Livesey forty-seven eggs from another nesting hole. The eggs are pearly white or pale cream in colour, very smooth and highly glossy when fresh, and of the texture and appearance of highly polished ivory. As incubation proceeds, a good deal of the gloss disappears and the delicate ivory white becomes stained and sullied, but in spite of this they are among the smoothest of eggs known. In shape, they are regular, only slightly more pointed at one end than the other,

The eggs vary in length from 56·4 mm. to 65.5 mm. and in breadth from 41·9 mm. to 45.2 mm. The average size of one hundred eggs is reported to be 61·8 mm. × 43·3 mm.

Specimens in the collection :—

One egg.—Length—61 mm.
Breadth—46 mm.
Colour—White.

ORDER FALCONIFORMES.

SUBORDER FALCONES.

Family ACCIPITRIDAE.

Milvus migrans govinda (Sykes).

(The Common Kite or Pariah Kite).

The Common Kite lays at different seasons in different localities. In the plains of Northern India and the Punjab the great majority lay in February, a few only breeding in the preceding and succeeding months. But generally it may be said that this Kite begins to breed in the plains by the end of December and continues through January and February, but in the Himalayas, where they breed up to 7,000 feet they lay principally in March and occasionally as late as April.

The nest is an untidy structure, mostly placed in a fork, but not uncommonly laid on a flat bough It is mainly composed of sticks and twigs, particularly those of the thorny Acacias, lined or intermingled with rags, leaves, tow, etc. The birds are perfectly fearless, breeding as freely on single stunted trees, situated in the densest populated bazaars or small, crowded grain markets, as on the largest trees in the open fields. The great majority breed in the suburbs of the towns and villages, but single nests may be found far away from human habitations in almost virgin jungle. The site selected is usually either one of the larger forks of a tree or a mass of branches ; occasionally they are known to build their nests in old ruined mosques and old forts and ruined buildings.

The normal number of eggs appears to be two or three. but occasionally four eggs have been noted, and sometimes only a single egg is incubated.

The eggs vary a great deal in colouration. Many of them are of a dull, dirty white colour, almost spotless, while others have scanty markings of light reddish to dark red brown, whilst some again, are richly marked with large blotches of deep reddish brown and are extremely handsome. Some of the unusual types are equally beautiful. Among

these are eggs with a pale, pink ground profusely blotched with deep chestnut ; others have a white ground with pale lavender or pale pinky red blotches, while still others are marked with twisted lines and spots of blood red or purple-brown. In some eggs the ground colour is a dull, mottled purple, clouded over with deeper shades of purplish brown. Compared with those of many other related species, the eggs do not vary very much in size or shape ; they are normally a vary perfect oval, scarcely more compressed at one end than at the other, but elongated, pointed, spherical and pyriform varieties occur. The colour of the egg shells, when held up to light, varies a good deal ; in some it is a light green, in others much deeper green. Although as a rule the eggs are glossless, a good many, when freshly laid, bear more or less a natural glaze which greatly brightens up their colouring.

The site selected for the nest is generally one near or in villages and towns and within easy reach of the garbage and offal which forms the bird's staple diet; at other times trees, either single or one of a clump, in cultivation are chosen, and, less often still, trees in scrub jungles on the extreme edges of thin deciduous forest.

The eggs vary in length from 56·6 mm. to 61·7 mm. and in breadth from 44·5 mm. to 47·7 mm., but the average of thirteen eggs is 58·7 mm. by 45·7 mm.

One hundred eggs recorded by Stuart Baker averaged 52·7 mm. x 42·7 mm.

Specimens in the collection :—

Two eggs (in a nest) :

(i) Length : 55 mm.
Breadth : 45 mm.
Colour : Brownish white, with greyish spots.

(ii) Length : 54 mm.
Breadth : 43 mm.
Colour : Brownish white, with greyish sopts.

Nest—

Diameter : 550 mm.
Height : 330 mm.

Haliastur indus indus (Boddaert).

(The Brahminy Kite).

The Brahminy Kite breeds wherever found between December and April. It lays mostly from January to the early part of April, according to season and locality. In Assam, Bengal and South West India, January and February are the favourite months, but in North West India, these birds usually lay in February and March. In Upper India, where it is comparatively rare, it almost invariably makes its nest in the neighbourhood of water, building a rather large loose, stick structure, scarcely distinguishable from that of the Common Kite (*Milvus migrans govinda*), high up on some large tree such as the mango, tamarind or peepul tree. In fact it places its nest in almost any kind of tree in any position, sometimes as high as 50 feet up, sometimes even as low as ten feet. The tree selected may be a single one growing in cultivation, or it may be one of a clump or in a fruit grove, less often one in thin deciduous jungle.

The nest is very rough and untidy and composed mainly of small sticks, but mixed with these may be found grass, woods, skins, bits of cloth, human and other hair and or other rubbish obtainable from the neighbourhood of villages. The nest, which is from about 18 inches to two feet in diameter, and from three to five inches in depth, with a rather considerable depression internally, is sometimes perfectly unlined, at other times has a few green leaves laid under the eggs as in an Eagle's nest, but most commonly is more or less

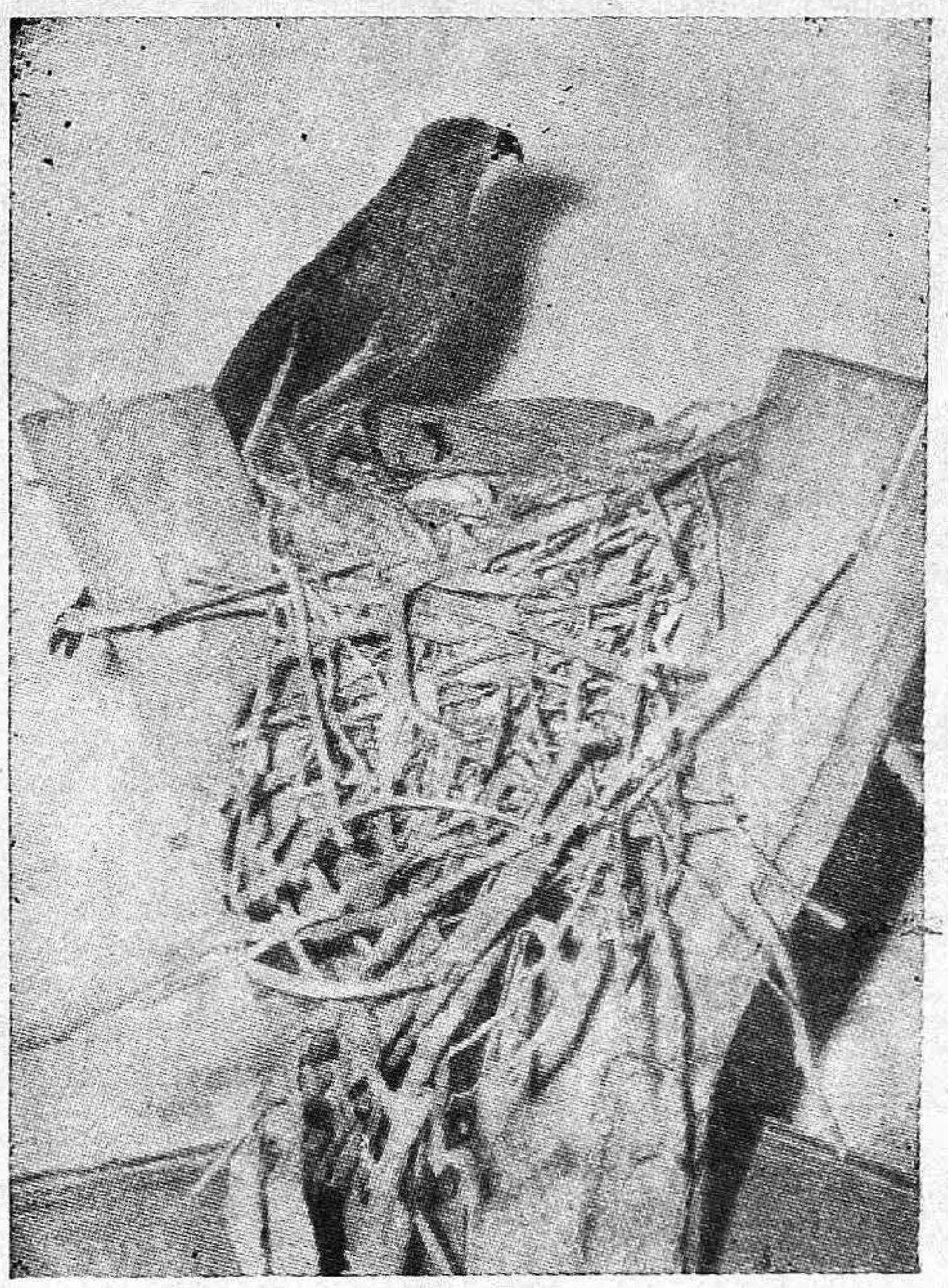

Figure 7. Milvus migrans govinda Sykes
(The Common Kite with nest and eggs)

lined, or has the materials of the inner part of the nest intermingled with pieces of rag, wool, human hair and other similar material. Often the nest is placed in a tree in the middle of a fishing village and occasionally on the roofs of houses. Normally they lay two or three eggs in most districts, but in the Decan four eggs are often found.

The eggs vary in shape, but typically, they are very perfect, moderately broad ovals, only slightly compressed towards one end. As a rule they are smaller and less richly coloured than the eggs of *Milvus migrans govinda*. The ground colour is often all whitish or greyish white, sometimes unspotted, but dingy, and sometimes with a few flecks, smudges or lines of light red, reddish brown or purple, and spotted, at times, towards one end only, with pale dingy brown,and sometimes scantily blotched and spotted with reddish brown. A few eggs, however, perhaps one in fifty, are really handsome, with numerous deep patches and spots of red-brown or blood-red.

In size, the eggs vary from 47·0 mm. to 55·9 mm. in length, and from 38·1 mm. to 35·5 mm. in breadth. One hundred eggs average 50·7 mm. x 40·2 mm.

Specimens in the collection :—

Two eggs :

(i) Length : 46 mm.
Breadth : 36 mm.
Colour : Dirty white.

(ii) Length : 47 mm.
Breadth : 35 mm.
Colour : Greyish white.

One nest (with a sitting adult bird) :
Length : 600 mm.
Breadth : 510 mm.
Height : 230 mm.

Astur badius dussumieri Temminck.

(The Indian Shikra.)

The Shikra breeds practically all over India in the plains and in the Himalayas up to a height of 5000 feet, or possibly more. In Southern India it breeds in March and April and in Northern India during April and May. The nest is usually placed high up on trees in the fork of a branch near the top of the tree. The nest is generally built in the trees either in the open or preferably in orchards or groves. Mango trees in clumps often form favourite sites for these nests which are generally placed high up in the forks of stout branches. The nest is losely built of twigs and smaller sticks and seldom lined; but if it is at all lined, the lining is composed of fine grass-roots. The loose structure of the nest renders it incapable of withstanding much handling. The nest is much smaller and less compact than those of the Toorumtee (*Falco chicquera*), and its average diameter is about ten inches.

The Shikra takes a full month to perpare its nest, only putting on two or three twigs a day which it places and replaces fussily several times, but the result is a loose, raggedlooking structure.

The eggs are normally three in number, but sometimes four and occasionally even five eggs have been taken. The eggs do not very much in shape. They are a little shorter and stouter than those of *Falco chicquera*. They are oval or somewhat pyriform, a rather longer egg in proportion to its breadth than is usual in this family of birds. They belong to the Goshawk and not to the Sparrow Hawk type. The egg shell is smooth, fine and glossless, and in colour the eggs are of very delicate, extremely pale skim-milk blue or

bluish white and, as a rule devoid of markings. The colour fades rapidly to almost pure white. At most the eggs are thinly sprinkled all over with very faint greyish specks and spots, thus differing from the apparently closely allied *A. nisus*, the eggs of which are often richly marked. Sometimes the eggs are seen with a few black specks or with faint reddish blotches.

In size the eggs vary from 35·8 mm. to 41·9 mm. in length, and from 28·4 mm. to 33·5 mm. in breadth, but the average size is 39·4 mm. x 31·00 mm.

Specimen in the collection:—

One egg : Length : 38 mm.
Breadth : 30 mm.
Colour : White.

Aquila rapax vindiana Franklin.

(= *Aquila fulvescens*)

(The Indian Tawny Eagle)

This Eagle is found occurring throughout the greater part of India, excluding the wetter parts such as Travancore and the Malabar Coast, and Eastern Bengal and Aassm. It breeds throughout the drier portions of continental India. In different parts of Upper India it lays from the middle of November to the middle of June, but it is during December and January that the great majority of them lay their eggs and it is very rare to find any eggs after February. The nest is always placed on trees; it is generally built on tops of trees, of moderate size, often on very low ones, and rearely on high trees. It is nearly always built on trees standing quite in the open.

The nest varies greatly in size; sometimes it is a neat, compact structure barely two feet in diameter and less than one foot in depth, and lined with green leaves, but sometimes it is nearly double this size in breadth and depth, being nearly four feet in diameter and very unitidy, with a lining of grass and rubbish. Sometimes the nests are lined with straw and grass intermingled with a few feathers, and sometimes they have no lining at all. They are generally placed at the very top of the tree.

The normal number of eggs in a clutch is two, but often there is only one egg and occasionally three eggs have been found. The eggs vary greatly in size and shape. Normally the egg of this species is a somewhat broad oval, slightly pointed towards one end, but some eggs are very long and pointed. A few of the eggs are nearly spherical, but the broad, oval shape seems to predominate.

The eggs are generally white or greyish whtie, or white wiih a very faint tinge of bluish green, sometimes unspotted, but more often just faintly speckled or smeared with pale yellowish brown or reddish brown, but occasionally one meets wih eggs handsomely marked with conspicuous markings. Of the markings, the most common are a few large blotches and splashes of yellowish brown, accompained by rather numerous specks or spots of the same colour, distributed pretty evenly over the whole egg. In some, the blotches are more extensive and numerous, and exhibit a tendency to cluster towards one end more than the other, and the colour becomes a reddish brown, or in some eggs a purplish brown, while in others all the three colours are mingled. Usually, not more than one third of the surface is found covered with markings. Many of the eggs, when taken from the nest, have a faint gloss on them; but they lose this by washing. The texture is generally close and compact.

In size the eggs vary from 59·7 mm. to 82·6 mm. in length, and from 45·7 mm. to 57·2 mm. in breadth; but the average of about one hundred and sixty eggs measured was 66·8 mm. by 53·6 mm.

Specimens in the collection.—

One egg : Length : 68 mm.
Breadth : 52 mm.
Colour : White.

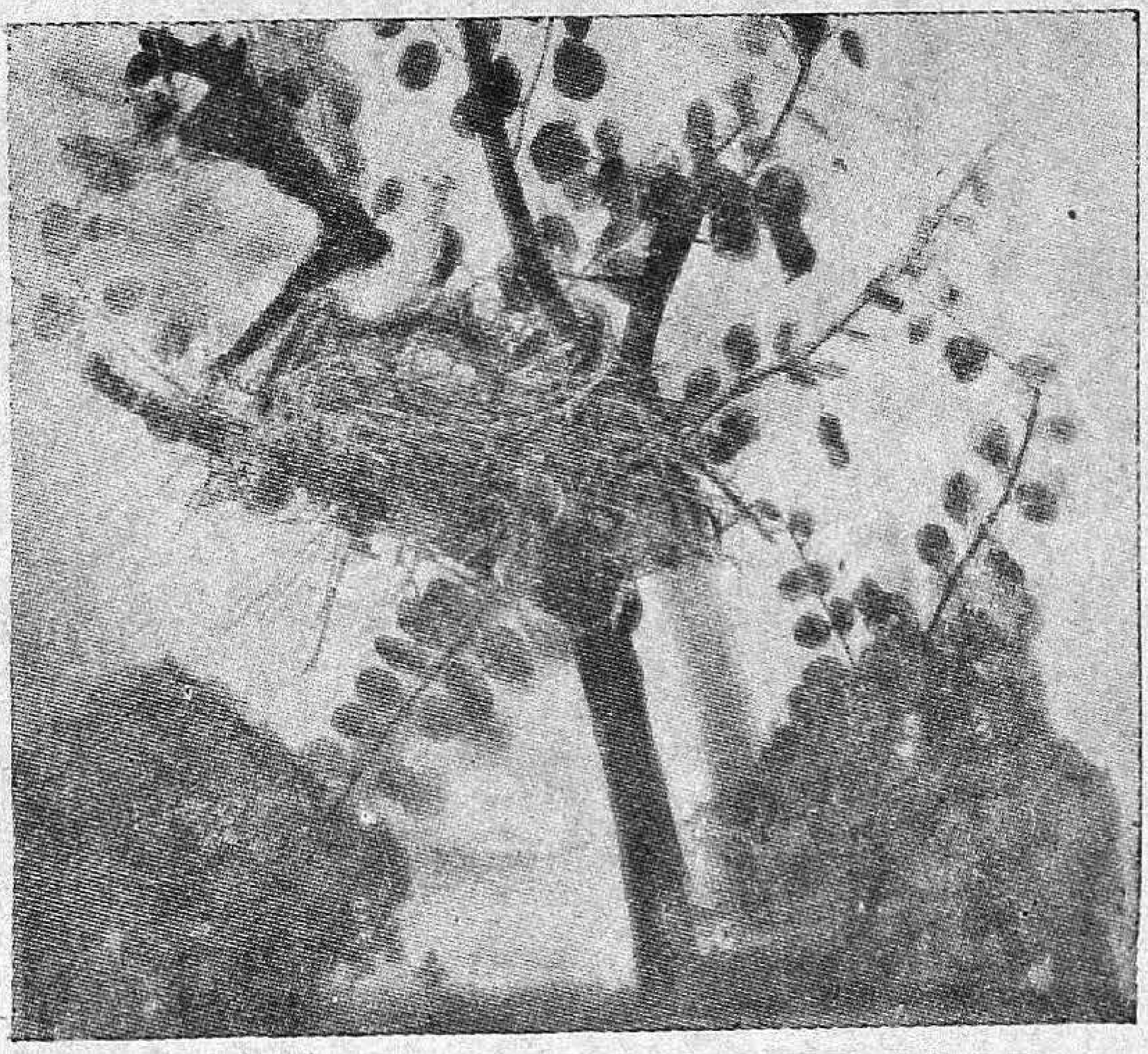

Figure 8. **Haliastur indus indus** (Boddaert)
(The Brahminy Kite with nest and eggs)

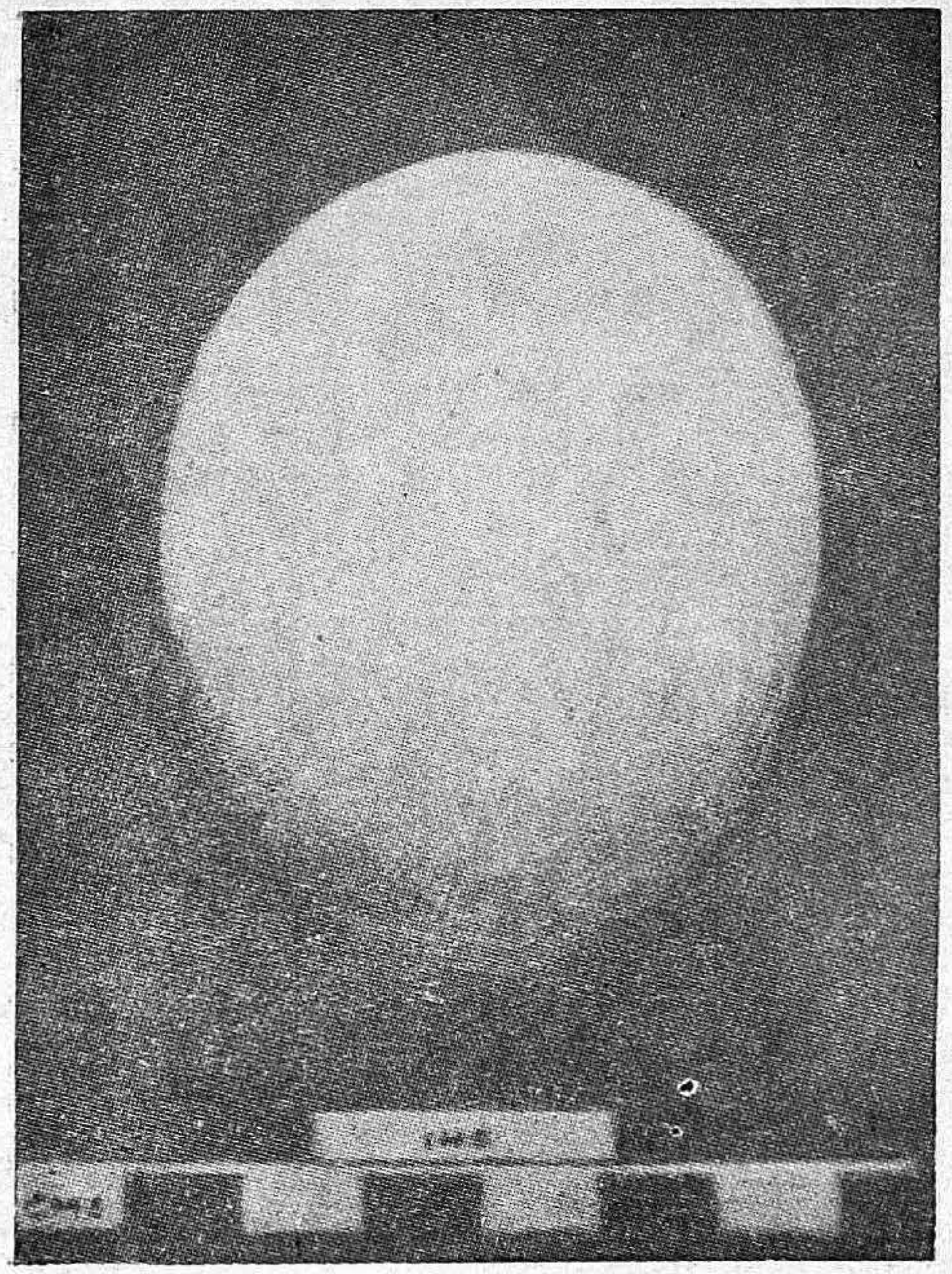

Figure 9. **Haliaetus leucoryphus** (Pallas)
(Pallas's Fishing Eagle)

Haliaetus leucoryphus (Pallas).

(Pallas's Fishing Eagle)

The Pallas's Fishing Eagle breeds all over India and in the Western Himalayas up to about 6,000 feet from November to March. The greater number of these birds, however lay in December. They build their huge stick-nests high up on large trees such as the peepul or banyan trees. The trees that they select are almost invariably solitary ones usually situated on the banks of one of the larger rivers, swamps or lakes, occasionally some distsance away from water in a tree in or near some fishing village.

The nest is a huge platform of sticks, some of which are often as thick as a man's arm with a superstructure of thinner sticks and twigs, and with only a slight depression towards the interior, which is lined with fine twigs and green leaves, occasionally mixed with rushes and straw.

The nest is usually placed in a broad fork, near the very top of the tree, on branches that seem scarcely strong enough to support the huge mass, and is sometimes occupied by the same pair for many successive seasons.

The eggs number two to four, but the usual number of eggs laid by this species is three. Typically, the eggs of this species are a rather broad oval, but a great deal of variation occurs both in size and shape. The texture is very coarse, but the actual surface is fairly smooth. The egg shell is greyish white and absolutely unspotted, but as incubation proceeds, like most other Eagles' eggs, they become much soiled and stained with dingy yellow. The eggs of this species can generally be distinguished from those of most of our other Indian species of Eagles, except those of *Polioaetus ichthyaetus and Spizeaetus nepalensis* by the intensely dark green colour of the shell when held against light. The surface of the egg shell also feel smoother to the touch than most other Eagles' eggs.

The eggs vary from 64·8 mm. to 76.2 mm in length and from 51·3 mm. to 57·7mm. in breadth, but the average of thirty eggs measured was 69.4 mm. by 55·1 mm.

Specimens in the collection :

One egg : Length : 76 mm.
Breadth : 60 mm.
Colour : Greyish white.

Spilornis cheela albidus (Latham).

(The Crested Serpent Eagle).

The Crested Serpent Eagle, or, as it should perhaps more properly be called, the Indian Harrier-Eagle, breeds throughout the Sub-Himalayan ranges and regions, as far west, at any rate, as Kangra, at heights from 1,500 to 5.500 feet above the sea level, laying in March, April and May.

The nest is as a rule always placed on trees in the immediate vicinity of water, not at the top of the tree, but in some fork, like that of the Common Kite.

It is circular, loosely made of thicker or thinner sticks and twigs, and lined with fresh leaves or fine twigs and roots of grass; it varies in size from 1·5 to 2 feet in diameter and from 4 to 8 inches in thickness.

The nest is about half way up the tree, not on the top, and placed, more like the nest of the Common Kite, on some fork.

It builds a peculiar and not very large nest. The nests are always made of the twigs of the tree on which it is placed, fresh twigs broken off by the bird, and the lining of the nest is of leaves of the same tree. No feathers, mud or other material are used in the construction of the nest, which is about 1·5 foot across; the hollow in which the eggs are laid is rather deeper than is usual with birds of this class.

This species lays usually one egg, but occasionally two eggs appear to be laid. Generally speaking, the eggs of this species are broad ovals, in some specimens somewhat pyriform, and in many a good deal pointed towards the small end. The texture of the shell is much like that of the Common Kite—rather rough and glossless. The ground colour is bluish or greenish, more rarely reddish white—in some, thinly and scantily speckled and spotted with reddish brown and red; in some, sparingly clouded and dingily blotched with pale purple or purplish brown in others with the markings denser and richer, forming at times a confluent brick-dust red cap at the larger end, mottled with deep red, and the whole of the rest of the surface thickly streaked and speckled and spotted with brownish red and purple.

In length they vary from 66·5 mm. to 73·1 mm. and in breadth from 53·8mm. to 57·1 mm. but the average of a dozen eggs is 70·6 mm. by 55·9 mm. nearly.

Specimens in the collection :—

One egg : Length 59 mm.
Breadth : 50 mm.
Colour : White.

Family FALCONIDAE

Falco jugger J. E. Gray.

(The Laggar Falcon).

The Laggar Falcon occurs practically over the whole of India from the extreme South to the Himalayas and from Afghanistan, Baluchistan and Sind on the West to Manipur and Assam in the East. The Laggar Falcon breeds over the whole of its area in January, February and March, but the majority appear to lay in the early part of February. Occasional second layings may be taken in April and one nest is Sind has been taken even as late as in May. Occasionally they build their own nests, but, as a rule, they use old nests of vultures, kites and even crows, not troubling even to repair them so long as they will hold their eggs in safety. The situation of the nest varies. Whether it is built or stolen, the nest is sometimes placed on large trees such as the peepal, and sometimes on ledges or in recesses of rocky or earthern cliffs and sometimes in the face of ancient ramparts where one or two stones are missing, or on more or less inaccessible cornices of old and ruined buildings or tombs.

When built on trees, the nest is usually a large and massive one, some two feet in diameter, if circular, or, if as is more common, oblong in shape, some 2·5 feet in length by 1·5 feet in breadth, and fully 6 inches in thickness. It is composed of twigs and small sticks, at times without any lining, and at times, lined with a little grass or straw, or even leaves. Occasionally the nest is very much larger than this, but it is then generally found that such a nest is not the bird's own nest but that of some other bird which has been taken possession of and repaired.

Where the bird selects a recess or ledge in a cliff's face for nesting, a large nest is rarely made, a few handfuls of sticks, just enough to prevent the eggs from rolling about, with a few feathers, accidentally or purposely intermingled, is all that is usually met with in such situations. Occasionally the eggs are laid on the bare earth in a slight depression without one particle of stick, grass of feather near them.

The eggs normally number three or four, rarely as many as five or as few as two have been noticed. They are typical falcon's eggs, but are much paler than those of the Peregrine Falcon. A number of them have a very pink tinge. In colour, the eggs vary much, like the eggs of all true Falcons. The usual type is a reddish, brownish or yellowish brown ground, very thickly speckled and spotted all over with a darker and richer

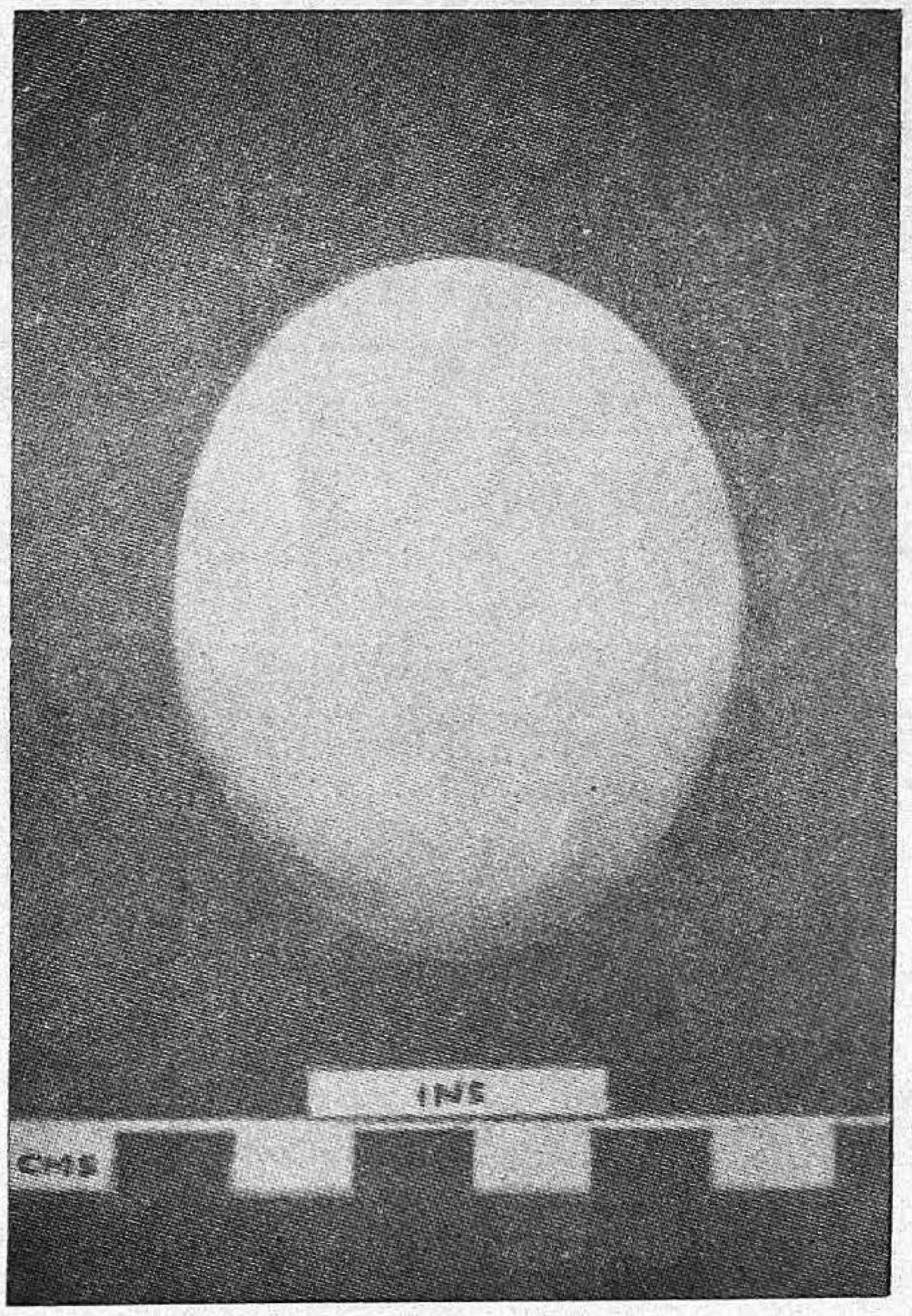

Figure 10. ♀ **Spilornis cheela albidus** (Latham)
(The Crested Serpent Eagle)

shade of the ground colour. The spots are often more crowded at one end than at the other, producing occasionally the effect of a clouded cap ; some eggs, in addition to the multitudinous specks, exhibit bold, red blotches, or dark, streaky clouds, and some again are very feebly coloured, a nearly uniform pale dingy buff, with scarcely a trace of blotches or even specks of a darker hue. In shape, the eggs are commonly a broad oval, slightly more pointed at one, end of a dull, glossless and slightly chalky, but still compact, texture The egg lining is white or slightly reddish white. The eggs are, as a rule, a longer oval than those of *Falco peregrinus* and are scarcely ever so richly coloured as the latter often are. The colouration of the egg, of course, is of the true Falcon type. Some eggs are of a nearly uniform, pale dingy, yellowish brown colour, paler towards one extremity than the other indistinctly clouded, blotched or mottled with a somewhat deeper and redder brown. Others are nearly uniform reddish brown, with scarcely any traces of distinct markings ; others have a nearly pure white, reddish white, pale dingy-yellow, brownish yellow or reddish brown ground, more or less boldly, extensively and thickly blotched and clouded, or even freckled, mottled and streaked with more or less bright or deep brick red or blood-red. As a rule, the markings are not very bold or sharply defined. The eggs fade much as time passes, but when first found, many of them are quite attractively coloured.

In size, the eggs vary from 47·0 mm. to 54·6 mm. in legnth, and from 37·6 mm. to 41·9 mm. in breadth. But of ninety-eight eggs measured, the average size was 51·1 mm. by 39·9 mm.

Specimens in the collection :—

One egg :	Length :	47 mm.
	Breadth :	38 mm.
	Colour :	Dirty white, with no apparent markings.

ORDER GALLIFORMES.

SUBORDER GALLI.

Family PHASIANIDAE.

Ammoperdix griseogularis griseogularis Brandt.

[= **Ammoperdix bonhami (G. R. Gray)**.]

(The Seesee Partridge).

The Seesee Partridge breeds over the whole of its range from the foothills up to about 6,000 to 7,000 feet during the months of April, May and June. It breeds alike in the Salt Range in the Punjab and throughout the rocky hills that bound the country westward, from Attock to the Gulk of Oman.

This pretty little species is very common and tame in the Salt Range. They are most generally seen running on the bare rocks or pecking about the dropping of cattle on the mountain paths. They run very rapidly and glidingly over the rockiest ground, rise pretty readily and fly smartly, always, if possible down-hill.

No nest is made, the hollow scratched out by the birds themselve having no lining or, at most, a very scanty one of grass and leaves. The nest is at best very slight, consisting of a little dry grass, curled into a whisp, and generally seems to be represented only by a few blades of grass laid in a depression scaraped by the birds. The site selected may be on a quite open hill side, or it may be in a ravine. The nest is at times placed under some thick, stunted bush or overhanging rock, more often in the midst of loose stones. Occasionally the nest is placed in one of the scanty tufts of grass that here and there dot these bare hills. They breed at all elevations, from the level of the plains to at least 4,000 feet. The nest is generally found in dry, parched and barren places, an is placed under a ledge of rock between some stones.

Eight eggs are normally laid, but sometimes as many as twelve have been found in a single nest. The eggs of this species are quite of the Bush Quail type, and though slightly larger, are very similar to those of *Microperdix erythrorhynchus*. In shape, they are more or less lengthened ovals, a good deal compressed towards one end ; some are slightly pyriform, and others, though there are exceptions, more of the true Partridge-type shape. The texture of the shell is comparatively fine and close, but it is everywhere pitted with minute pores, which, however, are much less visible in some specimens than in others. Some of the eggs have a faint gloss ; in others this is scarcely traceable.

In colour, the eggs vary a great deal ; some are almost pure white, but the majority have a very perceptible creamy or very pale *cafe-au-lait* tinge. From five to fourteen eggs are laid, generally six to nine ; they are pale cream, yellowish stone in colour, smooth and fine in texture, but generally quite glossless.

The eggs vary in length from 23·0 mm. to 38·1 mm. and in breadth from 25·4 mm. to 27·9 mm. ; but the average of twenty eggs is 35·6 mm. by 26·1 mm.

Specimens in the collection :—

Two eggs :	(i)	Length ;	34 mm.
		Breadth :	27 mm.
		Colour :	White.
	(ii)	Length :	36 mm.
		Breadth :	27 mm.
		Colour :	White.

Francolinus francolinus melanotus Hume.

(The Assam Black Partridge.)

This species occurs in Eastern Nepal through Bhutan Duars and Assam, Manipur and Bangla Desh, up to an altitude of about 2,000 metres. These birds frequent the vast stretches of tall grassland on alluvial river banks in the foothills of the Himalayas, and the Surma and Brahmaputra valleys.

The Assam Black Partridge commences to breed early in April and continues up to the end of July or early August, though in some cases, the late broods may be second ones, for a few birds breed in March also. The breeding season varies locally with the break of rains or firing of the grass. The favourite nesting places are the numerous stretches of grassland which run along the foot of the Himalayas and also the grass-covered rolling hills of the outer ranges up to an altitude of 5,000 feet and less often up to 7,000 to 8,000 feet.

These Partridges generally commence their breeding activities when the fresh, brilliant-green pasture which replaces the old burnt grass every year in the grasslands grows to a height of one and half to two feet.

The nest consists of a shallow scrape or hollow in the ground scratched out by the birds and lined usually with a flimsy pad of grass and leaves, occasionally quite well made, placed close to an ant-hill or bush on the edge of tall grass land or a *bheel*.

The eggs are four to six in number, but may occasionally number up to ten. They resemble the eggs of the Indian race of the Black Partridge. They are fine-textured, very broad ovals, sometimes, pointed at the small end. In colour, the eggs vary from yellowish olive to a warm olive brown or sienna-brown. Although the eggs are similar to those of the Indian race, on the whole they are darker and broader.

The average size of one hundred eggs is 37·8 mm. × 31·3 mm. (Baker).

Specimens in the collection :—

Two eggs :	(i)	Length :	38 mm.
		Breadth :	31 mm.
		Colour :	White.
	(ii)	Length :	39 mm.
		Breadth :	31 mm.
		Colour :	White.

Francoilnus pondicerianus interpositus Hastert.

(The North Indian Grey Partridge).

This is resident species found over the whole of North India, Eastern Sind, East Punjab, Rajasthan and Northern India, east to Bihar and West Bengal, throughout the drier hilly country of Chota Nagpur to Midnapur and Rajmahal. The species occurs over the whole of the area south from the Himalayan Terai to a line roughly extending from Poona to Kakinada. These Partridges frequent open grass and thorn-scrub conutry in the neighbourhood of villages and cultivated areas up to roughly an altitude of 500 metres.

This species breeds principally from March to September. There seem to be two district breeding seasons, the first principally during March and April and the second during August and September ; however, it nests locally and sporadically in other months also. The nest and eggs are similar to those of the South Indian Grey Partridge (*Francolinus pondicerianus pondicerianus*) but a very favourite nesting site is at the bottom of hedges or isolated clumps of cactus.

The eggs are typically broad ovals. In colour they vary from a pale cream or almost white to a fairly warm, pale, *cafe-au-lait* or buff. There are no markings. The texture is fine, smooth and clear, with a considerable gloss and the shape varies from peg-top to oval. The average size of ninety eggs is 32·4 mm. × 25·6 mm. ; they are therefore slightly smaller than those of the Southern Grey partridge, (*Francolinus pondicerianus pondicerianus*.)

Specimens in the collection :—

Two eggs : (i) Length : 34 mm.
Breadth : 27 mm.
Colour : White.

(ii) Lenght : 34 mm.
Breadth : 27 mm.
Colour : White.

Francolinus pondicerianus pondicerianus Gmelin.

(The South Indian Grey Partridge).

This is a resident bird found throughout Southern Peninsular India and Ceylon. It frequents dry undulating plains and eroded plataeu country with xerophytic thorn scrub, especially in the neighbourhood of villages and scattered cultivation.

This species breeds in the Peninsula more or less throughout the year, principally during the period from April to September, and in Ceylon from April to July. The nest varies, but often it is only a scrape in the ground lined with grass and leaves. under a clod, tuft of grass or bush in a ploughed field or in open scrub jungle Sometimes there is quite a well made nest of grass and weeds. Most nests are placed in grassland, thin scrub jungle or in ploughed fields and standing crops, less often they may be found in denser bush jungle. Hume also records certain nests as being built three feet from the ground in tangled bushes.

The eggs number four to eight, occasionally nine. They are broad ovals. In colour the eggs vary from a very pale cream or almost white to a fairly warm, pale *cafe-au-lait* or pale buff. There are no markings. The texture is fine, smooth and clear with a considerable gloss and the shape varies from peg-top to oval.

The average size of one hundred eggs is 34·5 mm × 26·1 mm. (Baker).

Specimens in the collection :—

One egg : Length : 35 mm.
Breadth : 27 mm.
Colour : White.

Coturnix coturnix coturnix (Linnaeus).

(The Common or Grey Quail).

This is a widely distributed species occuring throughout Central and Southern Asia and Central and Southern Europe, and the North and North-west of India. In India it occurs partly as a resident and partly as a winter visitor. In the winter, it wanders south to Madras and Travancore.

This species breeds in Pakistan, Bangala Desh, Kashmir, east through Bihar and West Bengal, South at least to Madhya Pradesh and southern Maharashtra (Satara District). In the winter, its numbers are greately augmented by the influx of migrants from outside and then it becomes very abundant locally throughout India, extending up to Cape Comorin.

A great number of Common Quails are resident and breed over the greater part of the Indian range of their habitat. Within India the overall breeding season extends from March to July, varying with locality, but most commonly, those Quails breeding March and April. However, nests have been found even in July, August and September and in fact they may be seen occasionally in any month from February to October.

The nest is just a hollow or scrape scratched in the ground in grass fields, among growing crops, etc., practically without lining. Sometimes the nest is lined with scanty leaves and grass. It is usually well hidden in standing crops or grassland. In Kashmir it is very commonly seen breeding round the lakes in long grass and fields of crops at elevations between 4,000 and 6,000 feet.

The eggs number six to eleven but sometimes even thirteen or fourteen eggs are found. They vary extraordinarily in colour and the nature of their markings. The colour varies from yellowish buff to deep yellowish brown or reddish brown or yellow stone colour. In some eggs the whole surface is covered with innumerable specks and freckles of dark brown ; in others, these freckles are fewer and are intermixed, with a few small spots and blotches ; in others, there are no freckles and the blotches are very large, bold and almost black ; in others, again, the freckless are so tiny and pale that at a little distance the eggs look pale clay yellow, brownish grey or live brown. The freckles and blotches are usualby some shade of dark or chestnut brown. Between these variations there is every degree of intergradation and intermediate coloruation.

The average size of one hundred Indian eggs is 29.7 **mm.** × 22.8 **mm.** **(Baker).** Maxima 33.0 **mm.** ×23.6 mm. and 32.0 **mm.** ×25.0 **mm.: minima:** 27.1 **mm.**×19.1 **mm.**

Specimen in the collection :—

One egg: Length : 24 mm.
Breadth : 20 mm.
Colour : White, spotted with larger and smaller blackish brown dots.

Coturnix coromandelica (Gmelin).

(The Black-breasted or Rain Quail.)

This species is more or less restricted to the Indian sub-region. These Quails are found practically all over India and Pakistan, chiefly in the plains, but also in the Peninsular hills and up to an altitude of 2,000 metres in the Himalayas. They occur normally as resident birds or as local migrants during the South West Monsoon, extending widely even over parched areas whenever food and sufficient shelter is available. They increase in numbers some what by seasonal influx from other areas.

The Black-breasted Quail breeds in the Deccan in multitudes during August and September, but the overall breeding season ranges from March to October straggling, into December, and varying with locality and mositure conditions.

Nineeggs appear to be the full complement of eggs, though as few as four are occasionally found more or less incubated.

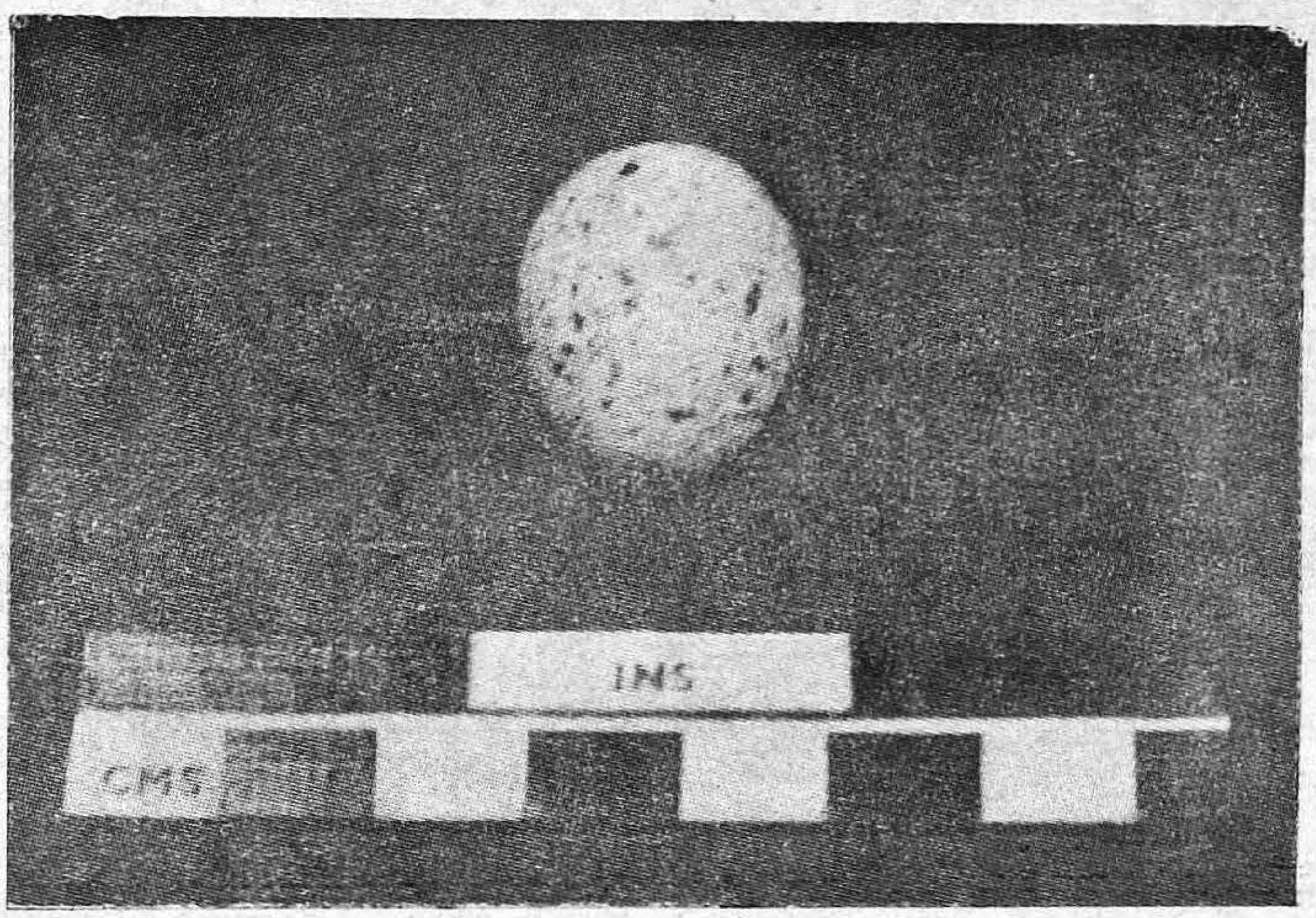

Figure 11; **Coturnix coturnix coturnix** (Linnaeus)
(The Common or Grey Quail)

The eggs are usually laid in hollows in the ground, without any lining whatever Occasionally the birds scrape a hole in a mass of decayed leaves. Most of the nests are placed close under plants or bushes, but some of them are found in bare open spaces. The colouration is so variable that it is difficult to describe. The ground colour varies from a faintly yellowish white to a rich *cafe-au lait* colour. The markings are of three types —

(1) Fine specklings and spottings thickly spread over the whole surface of the egg.

(2) Bold blotchings and frecklings ; some eggs of this type resemble much those of the Common Quail.

(3) Marblings, not unlike what are sometimes exhibited in the eggs of the Sandgrouse.

In colour, the markings equally vary—blackish, purplish, olive and burnt sienna browns, all occur ; but each egg exhibits only one shade. Typically, the markings are closely set, but in some few specimens this is not the case.

The eggs vary in length from 25.4 mm. to 30.7 mm., and in breadth from 20·3 mm to 22.6 mm., but the average of fifty-six eggs measured is reported to be 27·7 mm.. by about 21.2 mm.

Specimens in the collection :

One egg : Length : 26 mm.
Breadth : 22 mm.
Colour : Pale greenish white.

Perdicula argunda (Sykes).

(The Rock Bush Quail.)

The Rock Bush Quail is a resident species found all over Peninsular India from about Berar south through the Deccan to Madras. The breeding season is undefined and extends practically throughout the year varying with locality. The principal breeding months are March and April and August to November. However, March and September are the months in which most eggs are found. They always prefer semi waste strips of land, covered with high grass and in the neighbourhood of cultivation, for nesting. The nest is a scrape in the ground lined with grass, at the base of athorn bush or a grass tussock, or under the shelter of a rock. The excavated cavity which forms the nest is usually from five to six inches broad. The nest is slight, composed of grass, loosely wound round into a circular shape, and is placed generally, but not always, in a depression scratched for it by the birds, at the foot of some tuft of grass or under some thick bush.

The eggs are four to eight in number, generally five or six. They are normally creamy white, indistinguishable from those of *Perdicula asiatica* (the Jungle Bush Quail). Sometimes the eggs are of a pale reddish white colour and six appears to be the regular number of eggs.

Typically, the eggs are moderately broad ovals, a good deal pointed towards the small end ; but more or less elongated varieties occur, and here and there pretty perfect ovals, or even eggs pointed at both ends are met with. The eggs are creamy white, or pale reddish white, glossy and spotless, and tinged, but far less deeply than in the Grey Partridge, with excessively pale *cafe au lait* colour.

The eggs vary in length from 24·1 mm to 28·4 mm., and in breadth from 19·8 mm. to 23·1 mm. ; but the average size of forty one eggs measured is 25·9 mm. by 21·3 mm. The average size of one hundred eggs is 25·6 mm. x 20·1 mm. (Baker).

Specimen in the collection:—

One egg : Length : 25 mm.
Breadth : 18 mm.
Colour : Greyish brown, spotted and mottled with black.

Perdicula erythrorhyncha erythrorhyncha (Sykes).

(=*Microperdix erythrorhynchus* (Sykes).

The Painted Bush Quail.

The Painted Bush Quail is a resident bird common throughout the hills and jungles of the Peninsula of India, and in the Western Ghats strip of country, it occurs from about Khandala, south through Kerala, including the associated hill ranges in Coorg, Mysore and the Shevroy Hills in Tamil Nadu State between elevations of 600 and 2000 metres. It especially frequents grass and broken foot hills country interspersed with cultivation and also thin scrub jungle on open hillsides. The breeding season is not well defined and is variable locally, covering most months of the year. In the Nilgiris, these birds are abundant ; here they breed in the months of January, February and March, and again, in September and October. They build no real nests, the nest consisting of a mere scrape in the ground, sometimes lined with a little grass, and placed at the root of a bush or grass clump.

The eggs normally number four to seven, but occasionally ten to fourteen eggs have been taken. The eggs are long ovals, pointed towards the small end, somewhat glossy, spotless and of a uniform often very pale colour varying from a cream buff to a pale *cafe au lait* in distinguishable from those of the Jungle Bush Quail. Both in colour and size these eggs are intermediate between those of the Grey Partridge and the Rock Bush Quail.

The eggs vary in length from 28·2 mm. to 34·3mm., and in breadth from 22·1 mm. to 24·1 mm., but the average of thirty eggs measured is 31·0 mm. by 23·1 mm. The average size of 140 eggs is cited by Baker as 25·4 mm. x 19·5 mm.

Specimens in the collection :

One egg :	Length	:	29 mm.
	Breadth	:	22mm.
	Colour	:	Creamy white.

Galloperdix spadicea spadicea (Gmelin).

(The Red Spur Fowl.)

The Red Spur Fowl is widely distributed all over Peninsula India, south of the Gangetic Plain in Gujarat, Madhya Pradesh, Southern Bihar, Orrissa, Maharashtra, Andhra Pradesh, Tamil Nadu (including the Nilgiris), Karnataka (including Coorg) and Northern Kerala (Wynadd). It is found usually in stony foot hills covered with scrub and bamboo jungle, traversed by water courses and overgrown with brushwood, normally below an altitude of about 1000 metres. In South India, the Red Spur Fowl is abundant in the Nilgiris especially in the Coffee estates and Lantana patches even close to villages. Wherever it is found, it is a permanent resident.

The overall breeding season is from January to June, varying with local conditions but eggs may be found practically throughout the year.

The nest is a shallow depression in the ground scratched in the ground in dense bamboo or scrub jungle, often lined with dry leaves and grass. The nest is almost always placed in more or less dense undergrowth.

The eggs are normally three to five in number but up to seven eggs may be found. The eggs are typically the same shape as a hen 's egg, but much elongated and cylindrical Sand grouse egg-shaped varieties are common. The eggs are ent rely spotless, sometimes almost glossless, but sometimes fairly glossy, usually buff coloured, but varying in colour from a warm pinkish buff to a delicate fawn, a pale *cafe au lait* or even creamy white.

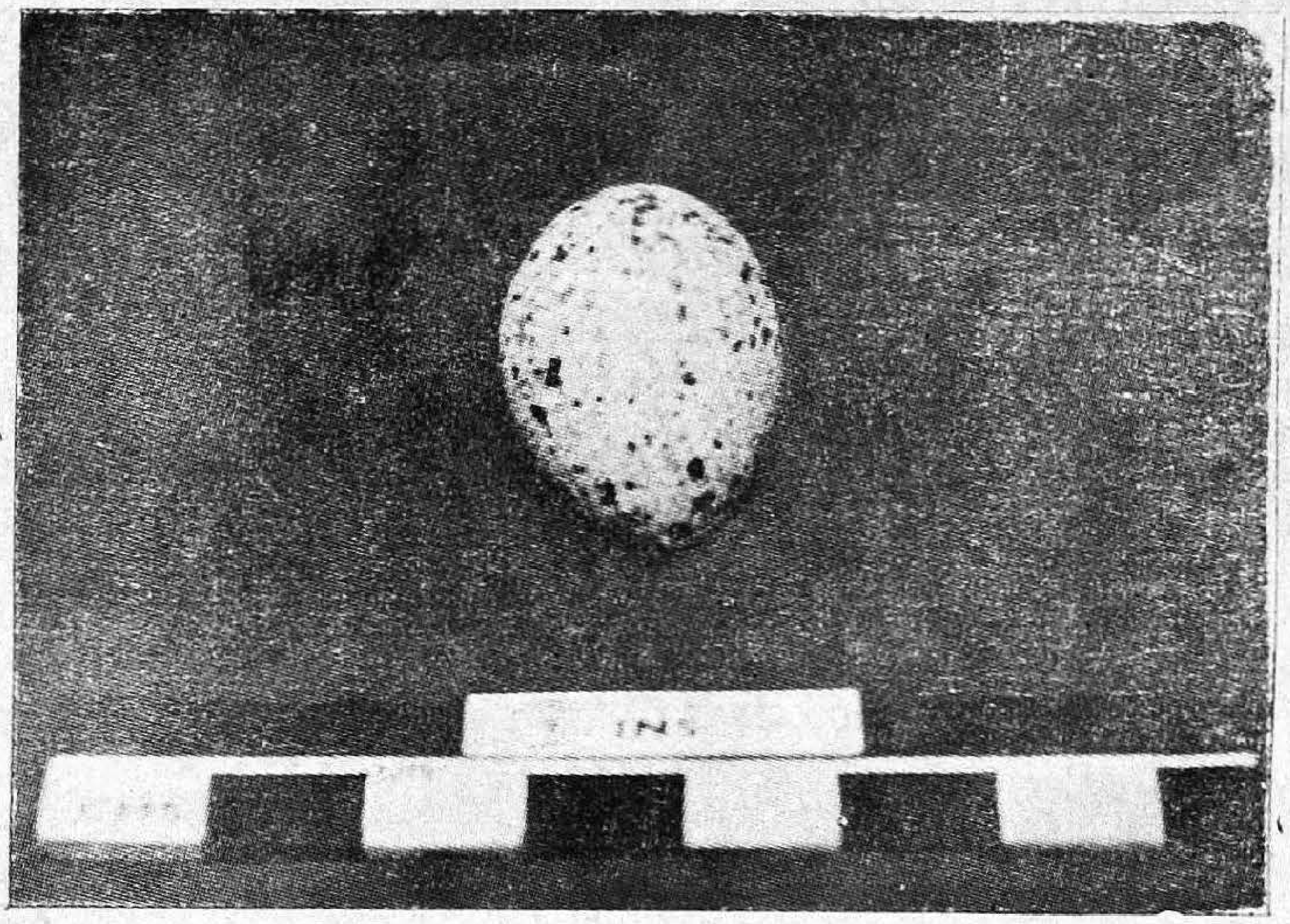

Figure 12. **Perdicula argunda** (Sykes)
(The Rock Bush Quail)

The eggs vary in length from 39·4 mm. to 47·0 mm. and in breadth from 28·7 mm. to 33·0 mm., but the average size of twenty five eggs is 42·4 mm. × 32·5 mm.

Specimens in the collection :—

One egg :	Length :	43 mm.
	Breadth :	31 mm.
	Colour :	Brownish white.

Gallus gallus murghi Robinson & Kloss.

(The Indian Red Jungle Fowl.)

The Indian Red Jungle Fowl is found as a resident species in the lower ranges of the Himalayas from Kashmir East and South Assam, chiefly in the foot hills and the Terai, but locally up to an elevation of about 2000 metres, Southwards, its distribution ranges over Uttar Pradesh, Madhya Pradesh, Bihar, Orissa, West Bengal, Assam and Bangala Desh. The range of the Red Jungle Fowl coincides with that of the *Sal* tree (*Shorea robusta*) and the habitat of the Swamp Deer (*Cervus duvauceli.*)

The breeding season is mainly confined to the period from the end of March to May, but eggs may be found at odd times from January to October and many birds of this species breed twice. The eggs are usually laid in a scrape in the ground lined with dry grass and bamboo leaves amongst dense undergrowth in forest. The eggs are laid on the ground either on a mass of fallen leaves and rubbish in a hollow, or sometimes just on the bare ground with no bed at all. Occasionally, the nest is inside a clump of bamboos two to four feet from the ground. As a rule the site is selected in dense undergrowth, either in the forest or scrub jungle, but sometimes the eggs are laid quite in the open, on dead leaves in bamboo jungle.

As a rule about five to six or seven eggs are laid, but occasionally as many as eight or nine and often only as few as four are laid. In appearance, they are like small, warmly coloured eggs of the domestic fowl. The colouration of the eggs varies from pale buff to pale reddish brown.

The average size of one hundred and fifty eggs is 45·3 mm. × 34·4 mm. (Baker).

Specimens in the collection :

One egg :	Length :	50 mm.
	Breadth :	36 mm.
	Colour :	Creamy white.

Gallus sonnerati Temminck.

(The Grey Jungle Fowl.)

This is a resident species found throughout Peninsular India almost to the extreme south, in suitable localities but not extending to Ceylon. It is usually found in all types of forest from secondary dry deciduous to moist evergreen and frequents mainly broken foot hills country commonly up to about 1,500 metres in the Sa pura and Eastern and Western Ghats complex. It is particularly partial to bamboo jungle and clearings and neglected tea, coffee and rubber plantations overgrown with lantana tangles.

This species breeds cheifly from February to May, somewhat earlier in the South, but locally more or less throughout the year. The nest is a scrape in the ground lined with dry grass and a bed of bamboo leaves amongst dense undergrowth in the forest.

The eggs normally number three to five or six but occasionally six to ten eggs have been recorded. The eggs vary much in size, shape and colour but there two are extreme forms between which all others are intermediate links—one is a long oval, with a fine, compact, hen's egg like shell of a very pale, creamy white colour with only a faint gloss; the other has a comparatively coarse shell, conspicuously pittled all over with pores after the fashion of the Guinea Fowl's or Pea hen's egg, but yet glossy, and of a broad, oval shape, slightly pointed towards the smaller end, and of a rich, almost deep, *cafe-au-lait* colour.

Between these two extreme types, every intermediate form, some of them with a few dark freckles of brown or reddish brown are found.

The eggs vary from 42·7 mm. to 52·1 mm. in length and from 30·7 mm. to 38·1 mm. in breadth ; but the average of twenty-five eggs measured is 46·7 mm. by 36·1 mm. (Hume).

Specimens in the collection :

One egg : Length : 46 mm.
Breadth : 37 mm.
Colour : White.

Pavo cristatus Linnaeus.

(The Indian Pea Fowl).

The Common Indian Pea Fowl is found in suitable localities practically throughout India, wherever there is cover, natural or artificial, as of sugarcane and other dense crops, and a plentiful supply of water. They are especially Common on the banks of canals, fringed with trees and traversing rich cultivation. They are not confined to the plains but occur in the hills also, as in the Himalayas, Nilgiris and other suitable ranges, up to elevations of from 3,000 to 5,000 feet.

Its breeding season in the northern and central part of its range is chiefly after the break of the rains in June, continuing through September; in Southern India chiefly during April and May, and in Ceylon chiefly from January to March or April.

The great majority of the Pea hens lay during July and August, but eggs have been found as late as the middle of October.

In its wild state, the nest is made in the forest in amongst thick grass or in dense bush or undergrowth often on a sloping bank and close to streams. Elsewhere it breeds in almost any kind of country, around villages, in thick crops, scrub or bamboo jungle and even in the long grass of the mango groves. Normally the nest is on the ground, but they have also been found in the hollows between the branches of huge trees in deserted vultures' nests and even on the roofs of old buildings.

The nest is generally a scrape, or broad depression in the ground, scratched by the hen, sometimes unlined, but more often lined with sticks, grass, twigs and leaves. The nest is usually well concealed in dense, thorny undergrowth (eg. *Lantana, Zizyphus*, etc.) Semi-wild birds often nest in ancient forts and ruined buildings and frequently on the flat roofs of houses in a village.

The eggs are normally four to six in number; they are usually broad, blunt ovals; but they vary very much in shape. Some are very broad, some decidedly elongated ovals, so that some resemble in shape more an English Pheasant's egg and others are more like a Turkey's egg. All are more or less pointed towards the small end. The colour also varies considerably, within certain limits; some are pure white, but more often they range from a very pale cream or *cafe-au-lait* to a warm buff. The eggs have thick, very strong and glossy shells, closely pitted over their whole surface with minute pores which are, however, more deeply indented and more conspicuous in some specimens than in others. Some eggs are dingy yellowish-buff, but typically, they are a pale pinkish, *cafe-au-lait* colour. Occasionally specimens are met with thickly freckled with pale reddish brown, feeble reproductions of the Moonal's eggs; but the vast majority are entirely unspotted.

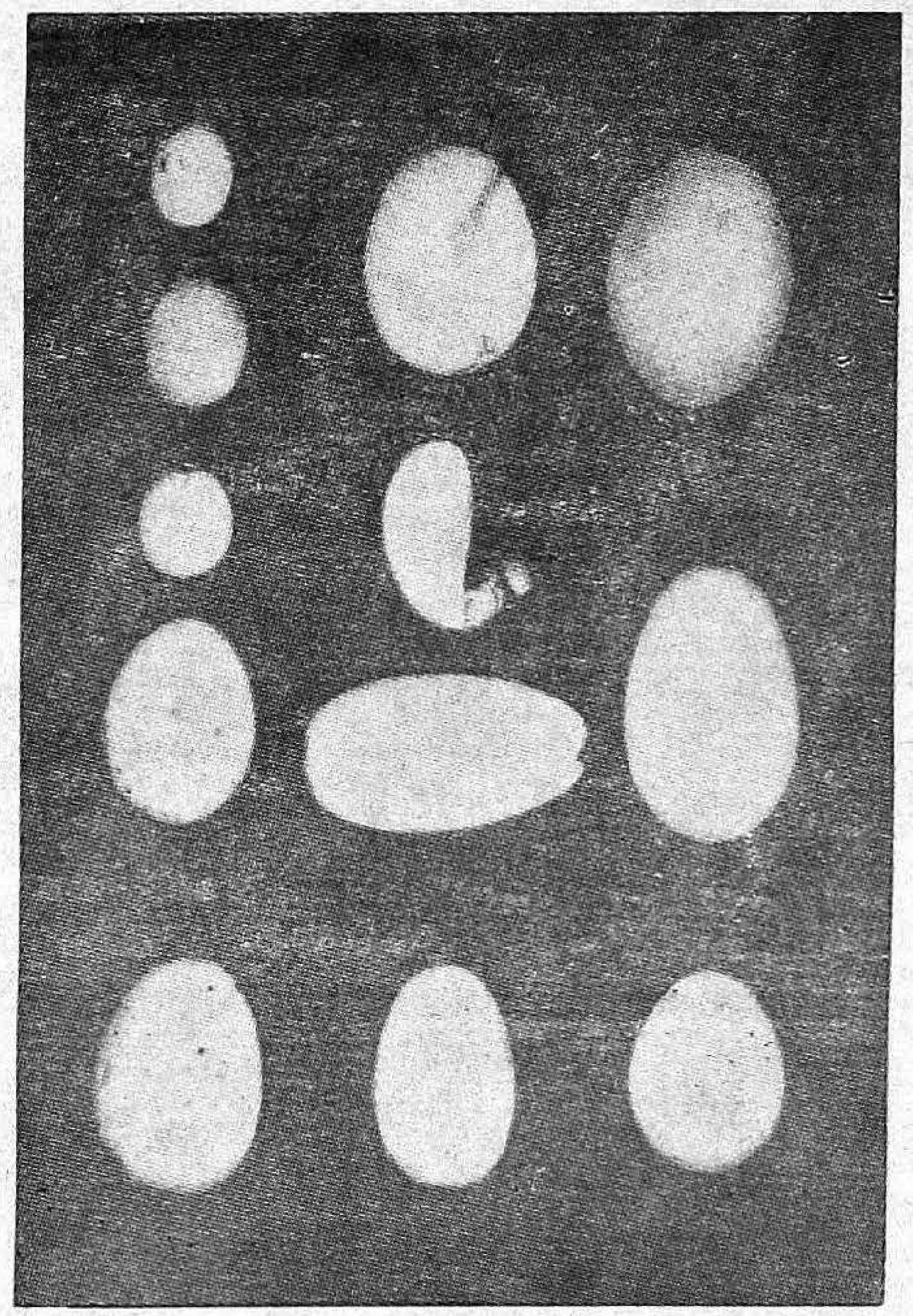

Figure 13. Variations in the Domestic Fowl's eggs.

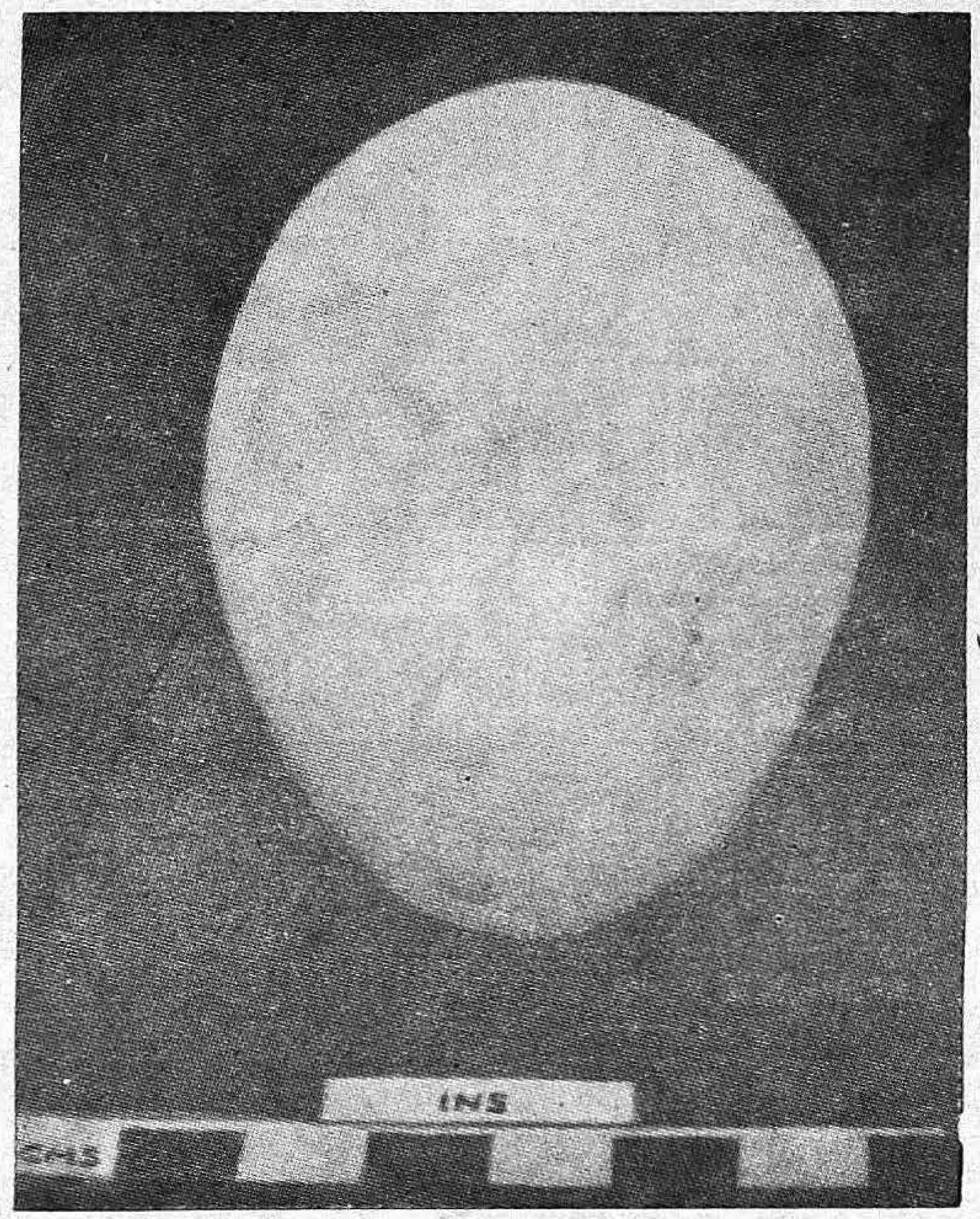

Figure 14. **Pavo cristatus** Linnaeus
(The Indian Pea Fowl)

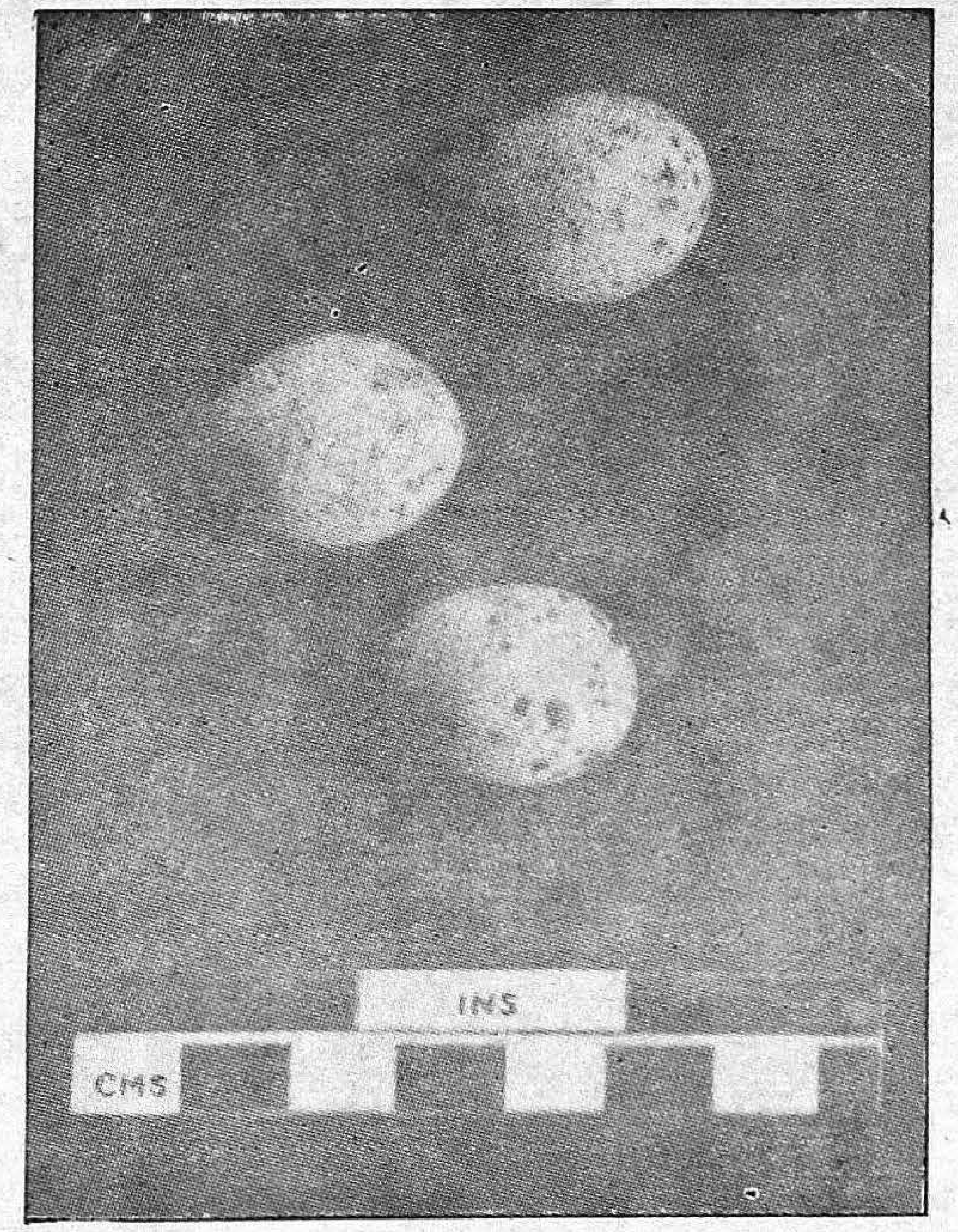

Figure 15. **Turnix suscitator taijoor** (Sykes
(The Common Bustard Quail)

The eggs vary in length from 64·8 mm. to 76·2 mm., and in breadth from 48·8 mm. to 55·9 mm. But the average of forty eggs is 69·6 mm. by 52·1 mm. The average size of one hundred eggs is reported to be 69·7 mm. x 52·1 mm. (Baker).

Specimens in the collection :—

One egg : Length : 75 mm.
Breadth : 58 mm.
Colour : White.

ORDER GRUIFORMES.

Family TURNICIDAE.

Turnix suscitator taijoor (Sykes).

(The Bustard Quail).

The Bustard Quail breeds pretty well all over India and Burma, where there is forest and jungle accompanied by long grass.

This species is common in the wooded districts of Madhya Pradesh, in Oudh, and Bengal, and in the mountainous districts of the North-west Provinces and the Punjab: while in the more open and indifferently wooded and watered parts of the North-West provinces, the Punjab, Rajasthan and Sindh, it breeds only as a straggler when it does make its appearance, arriving during the rains and leaving early in the cold season.

This bird is confined to the outer and lower ranges of the Himalayas (in which they rarely ascend, even in summer, to any elevation above 6,000 feet) and the valleys that skirt their bases.

The eggs are said to be usually deposited under a bush or in a slight, well concealed hollow.

In the Deccan, this bird breeds from July to September, further South from June to August, and in Ceylon from February to August. It may lay twice a year, but eggs are most usually found during July and August and at no other time.

Sometimes it makes no nest at all, and merely scratches a hollow at the base of, or in the midst of, some tufts of grass, or occasionally some little dense bush adjoining or surrounded by long grass. Sometimes it makes a little pad of grass, rather of dry grass three or at most four inches in diameter and half inch in thickness, which it places as a, lining to the hollow. Generally the nest is a bare, circular hollow scraped out at the base of a thick shrub, and without any lining.

This species breeds in May and June in the Darjeeling District from 2,000 to 4,000 feet. It builds on the ground in open, cleared country, by the sides of small shrubs or tufts of low grass. The nest is usually, though not always, hooded, loosely made of dry, half-rotten grass and measures externally about four inches in height, to the top of the hood, and about the same in width. The cavity is about 2¾ inches in diameter and an inch in depth from the lip of the cup. The bird is common in tea and cinchona plantations, and (in wet weather especially) greatly frequents the road, rising only when almost stepped on.

Four eggs are normally found in each nest. In shape, the eggs vary from moderately broad ovals, scarcely at all pointed towards the small end, to typical peg-tops. The ground colour is dull stone-grey or green, or greyish white, and they are very thickly and minutely speckled all over with a mixture of minute dots of yellowish and reddish brown and pale purple. Some eggs have absolutely no markings except this minute dotting or stippling, but the majority have spots and blotches more or less thinly speckled over the surface (often only at the large end, always most thickly there), of intense reddish or blackish brown or even bluish black. The minute dottings in many eggs, everywhere dense, are most so at the large end, there, with the blotches, they occasionally form an irregular, imperfect

and ill-marked, motled or smudgy cap or zone. The general appearance of the egg, when not closely looked into, is paler or darker dingy earthy brown, with dull blackish spots and small blotches. Some of the eggs have scarcely any gloss; others are highly glossy.

The eggs vary in length from 20·3 mm. to 26·4 mm., and in breadth from 18·0 mm. o 21·6 mm.; but the average of thirty eggs is 23·9 mm. by 19·8 mm.

Specimens in the collection :—

Three eggs : (i) Length : 24 mm.
Breadth : 19 mm.
Colour : White, with black, grey and brownish spots.

(iii) Length : 24 mm.
Breadth : 19 mm.
Colour : White, with black, grey and brownish spots.

(iii) Length : 24 mm.
Breadth : 19 mm.
Colour : White, with black, grey and brownish spots.

Family GRUIDAE.

Grus antigone autigone (Linnaeus).

(The Indian Sarus Crane.)

The Indian Sarus Crane occurs as a resident species throughout northern India south of the Himalayas (including Nepal Terai) from Sind and Punjab eastwards through Uttar Pradesh, Bihar and Northern Bengal (Duars) to West Assam. In the South, its distribtuion ranges up to Mahatashtra on the West as far as Khandesh and to the Godavary River on the East. In the Kashmir Valley, it has been recorded up to an altitude of 1,700 metres. It is most numerous in Gujarat, Eastern Rajasthan and the Gangetic Plain, and almost everywhere enjoys protection through popular sentiment. The birds are normally seen in pairs and frequent open, cultivated, well-watered plains and marshy jheels.

The Sarus Crane breeds after the rains have well set in; the breeding season ranges from July to December and even to March, but the eggs are laid chiefly during the monsoon months of July, August, September and October.

The birds generally select for their nesting-site some piece of ground entirely surrounded by water or by swampy marshland, but occasionally they nest in comparatively dry open places.

The nest is usually a huge pile of reeds, rushes and straw, about a metre in diameter at the top, placed on a bund in the midst of flooded paddy fields or on a small islet in a swamp or jheel. But the nests vary considerably in size those on on dry ground being only a few inches high, whilst those built in swamps may be as large as three feet high and nine feet across.

The eggs are normally two in number (or occasionally one only), greenish or pinkish white in colour, sometime spotted and blotched with brown or purple; the inner member is bright orange. A few eggs are unspotted, but most are sparsely blotched with reddish, deep reddish brown or purple brown, with others underlylng them of lavender or reddish grey.

In shape they are long, pointed ovals, and are usually a good deal pointed towards one end: but long, cylindrical varieties, narrower and more elongated than even similar varieties of the Great Indian Bustard are not uncommon. The shell is very hard and strong, and the texture is coarse. The surface is pitted and usually highly glossy but very rarely the surface is almost devoid of gloss. The shell is in most eggs pitted with

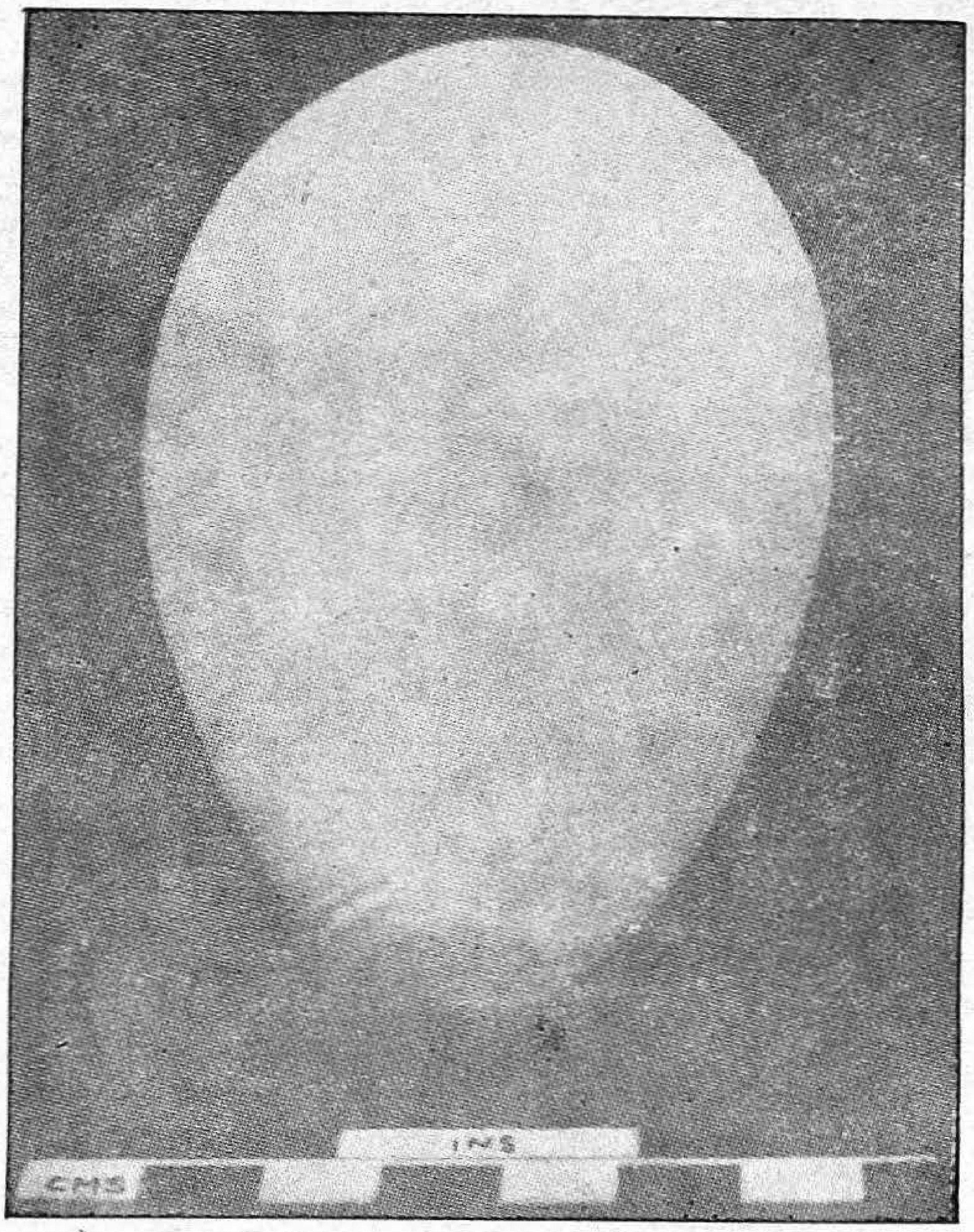

Figure 16. **Grus antigone antigone** (Linnaeus)
(The Indian Sarus Crane)

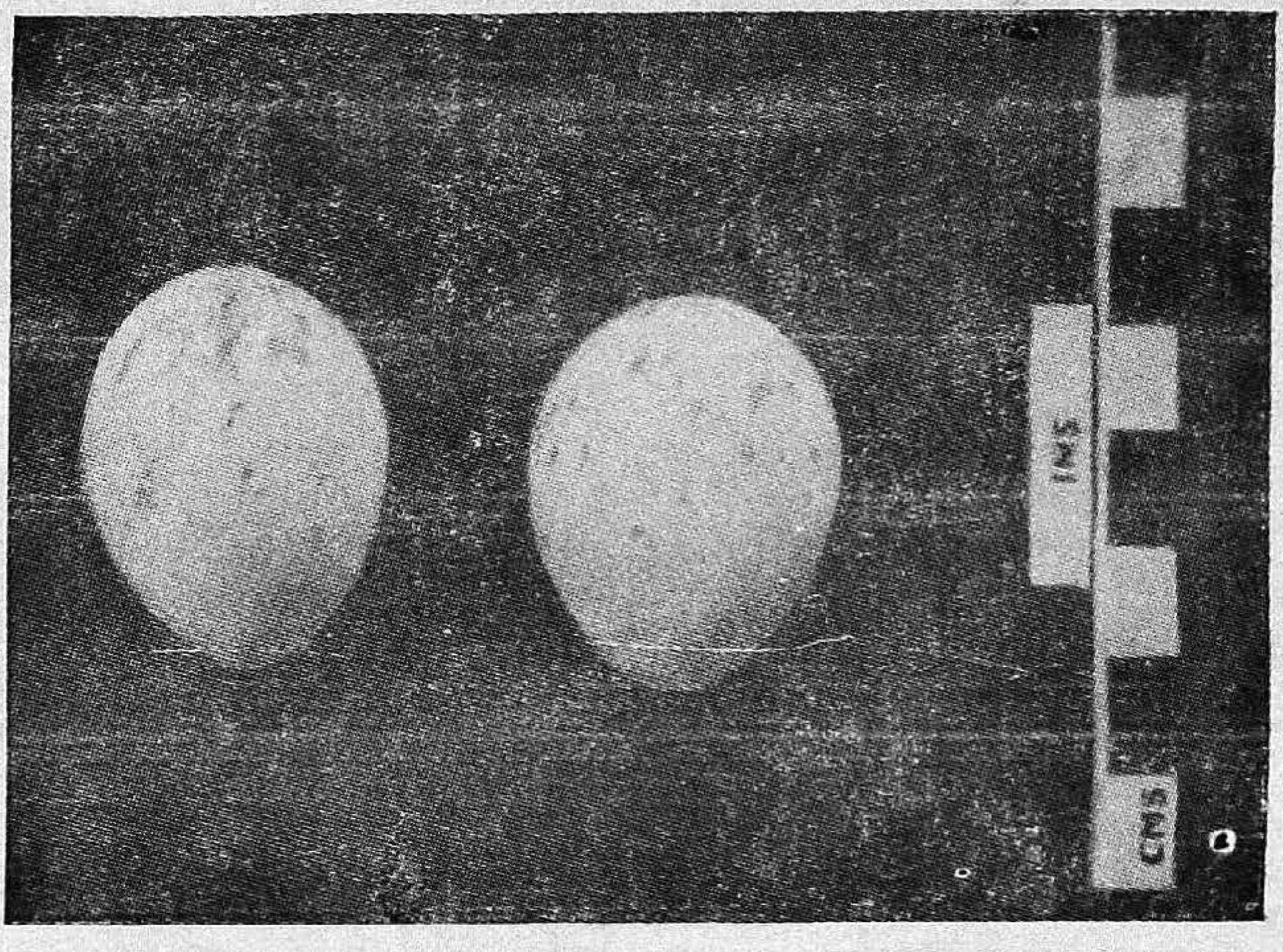

Figure 17. **Porzana porzana** (Linnaeus)
(The Spotted Crake)

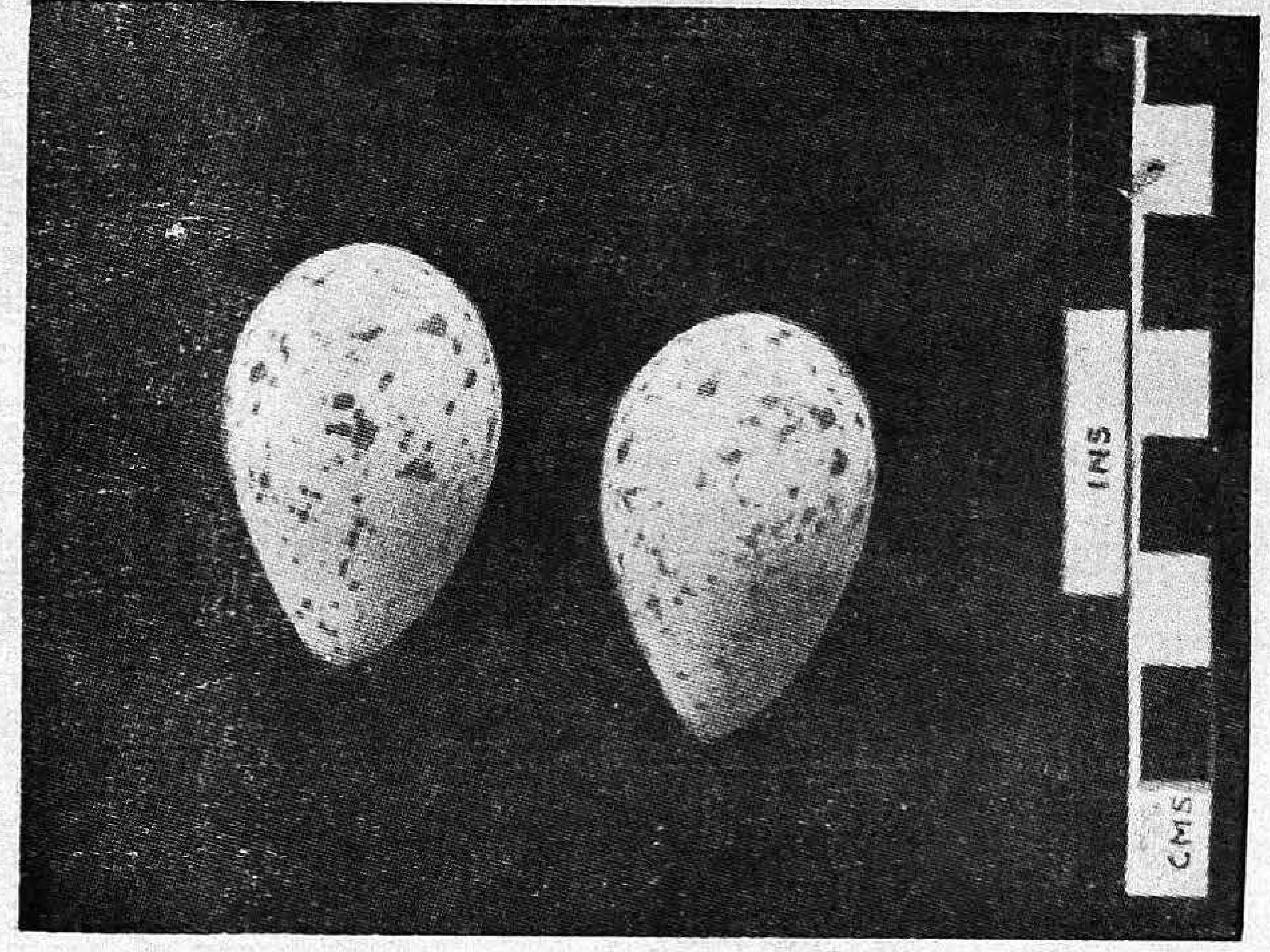

Figure 18. **Amaurornis bicolor (Walden)**
(Elwe's Crake)

small pores set rather wide apart, and in some specimens very conspicuous owing to the bottom of the pores being coloured differently from the rest of the shell, thus produce in a speckled effect. The ground colour varies; in some it is pure white in others it is a clear pale sea green and in yet others a sort of pinkish cream colour and numerous intermediate shades are also noticed.

The eggs vary widely in size. The average size of one hundred eggs is 104·4 mm. × 64·4 mm. (Baker).

Specimens in the collection:—

One egg: Length: 100 mm.
Breadth: 64 mm.
Colour: Pale greenish white, sparsely spotted with brown.

Family RALLIDAE.

Porzana porzana (Linnaeus).

(The Spotted Crake).

The Spotted Crake is only a migrant to India and does not breed within our limits. In Central Europe it breeds principally during May and early June, but in Finland, eggs of this species may be taken as late as in the middle of July.

The nest is composed of grass and rushes lined with finer grass, placed in amongst long grass or standing crops.

The eggs generally number eight to ten but frequently larger clutches are found, even fifteen eggs having been recorded. The ground colour varies from greyish to greenish buff, profusely marked all over with small spots and blotches of reddish brown or purplish brown with underlying spots of neutral tint and lavender grey. The eggs, though quite Ralline in character, can be separated at a glance from those of any of the other Rails either resident in India or migratory.

The average size of one hundred eggs is given by Witherby as 33·62 mm. x 724.5 mm. The maximum sizes are 37·5 mm. x 24·8 mm. and 33 0 mm. x 26·8 mm.; and the minimum ones are 29·1 mm. x 23·0 mm. and 32·0 mm. x 22·2 mm.

Specimens in the collection :—

Two eggs : (i) Length : 35 mm.
Breadth : 24 mm.
Colour : White. with greyish and brownish black irregular spots.
(ii) Length : 36 mm.
Breadth : 24 mm.
Colour : White, with greyish and brownish black irregular spots.

Amaurornis bicolor (Walden).

(=**Porzana bicolor Walden**.)

(Elwe's Crake.)

This Crake breeds in considerable numbers in the Khasia Hills, as also in the North Cachar Hills in the few places suitable to it. In Sikkim it is said to breed between 4,000 and 6,000 feet, but in Assam, the nests are found anywhere above 3,000 feet, whilst in Dibrugarh, it is not uncommon practically down to the foothills. Most of the nests are found in small patches of jungle round about, or between rice fields at an elevation of some 5,500 feet. The nest is a rough structure composed of twigs, leaves and portions of creepers, or reeds, grass or rushes, and water weeds, usually placed among reeds or in places where there is a thick bush or tangle of canes in or close to the water, and is very similar to that of the Brown Crake. The nest is usually built a few inches above the water. The eggs are pale cream or buff-coloured with small reddish blotches thinly scattered over the larger end with a few underlying markings of grey and neutral tint, and resemble those of the Common Indian Water Rail or those of the Brown Crake, but more richly coloured.

The breeding season is from the middle of May to the end of August, whilst the number of eggs laid varies from five to seven.

The eggs average 33·9 × 26·1 mm. ; the largest eggs measure 36·3 × 25·3 mm. and 35·3 × 27·0 mm. ; and the smallest eggs measure 31·3 × 26·1 mm. and 32·3 × 25·1 mm.

Specimens in the collection :

Two eggs :	(i)	Length :	36 mm.
		Breadth :	26 mm.
		Colour :	White, with brownish and greyish spots.
	(ii)	Length :	35 mm.
		Breadth :	26 mm.
		Colour :	White, with brownish and greyish spots.

Amaurornis phoenicurus phoenicurus (Pennant).

[**Erythra phoenicura** (Pennant).]

(The White breasted Water Hen.)

The White breasted Water hen breeds throughout India and Burma in the least arid portions of the country, but it is very rare in the Northwest Frontier Provinces and in Rajasthan and in the Punjab. In Ceylon, the eggs of this Water hen have been taken in almost every month of the year. The nest is a rough structure composed of twigs with a thick lining of grass or paddy straw or may be made of grass only. It is generally placed in a thick bush a little above the ground or in the ground amongst vegetable plants round tanks and swamps. Sometimes the nest is lined with a thick layer of leaves.

Normally about three to five eggs are laid.

Typically, the eggs are moderately elongated, slightly cylindrical ovals, generally rather obtuse at both ends. The ground colour varies from a very faint yellowish cream to a yellowish or creamy stone colour or pale buff. The markings consist of a large, mottled, irregular cap of slightly brownish red at one end and longitudinal streaks, blotches and spots scattered sparesely over the whole surface of the egg ; the markings are rather in the form of streakily arranged strings of blotches running down from the mottled cap at the end towards the other end of the egg and sundry more or less linear specks of the same red colour scattered about the rest of the egg, in some thickly, in some thinly, and with a few pale purple spots, streaks and small blotches distributed about the egg, chiefly in amongst and in the immediate vicinity of the blotches of the cap where the red is generally brightest. The primary blotches are light to dark reddish brown and the secondary ones lavendar to purple grey.

The eggs vary from 36·3 mm. to 43·2 mm. in length, and from 28·2 mm. to 30·7 mm. in breadth, but the average of twenty eggs is 39·9 mm. by 30·0 mm. nearly.

Specimens in the collection :

Two eggs :	(i)	Length :	38 mm.
		Width :	29 mm.
		Colour :	White with rather closely set brownish and greyish markings.
	(ii)	Length :	40 mm.
		Breadth :	28 mm.
		Colour :	White with rather closely set brownish and greyish markings.
One nest :		Diameter :	450 mm.
		Height :	410 mm.

Gallicrex cinerea cinerea (Gmelin).

(The Kora or Water Cock.)

The Kora or Water Cock occurs as a resident bird in well watered areas throughout the whole of India. It is found in sufficiently wet localities south of the Himalayas, from West Pakistan (Sind, Punjab), east to Assam and Bangla Desh, southwards throughout Peninsular India, Ceylon, Andaman Islands, Nicobars (?) and the Maldive Archipelago. It frequents reedy swamps and low lying rice fields and irrigated sugar cane cultivation and channels and ponds bordered with rushes and reeds.

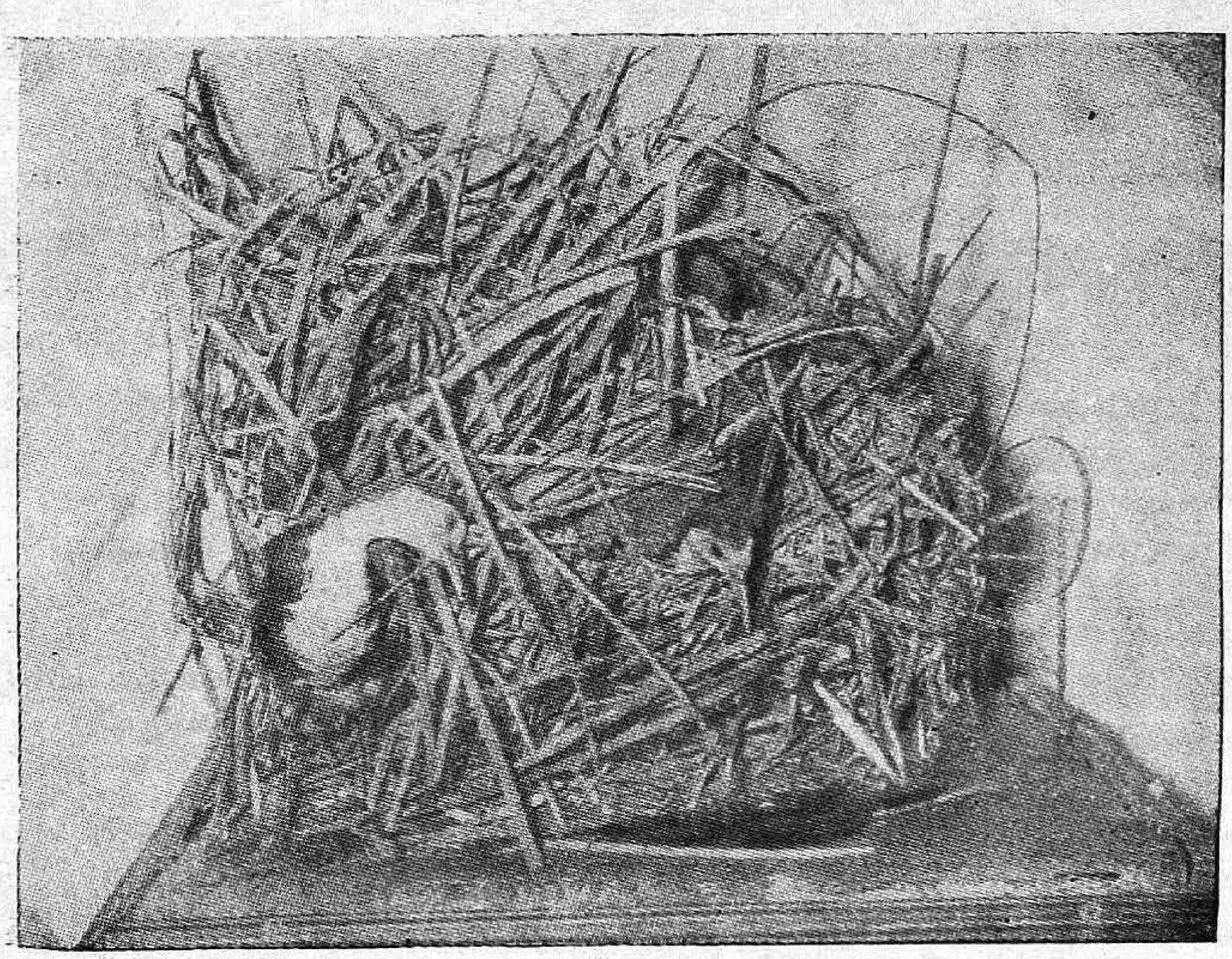

Figure 19. **Amaurornis phoenicurus phoenicurus** (Pennant)
(The White-breasted Water hen) (Nest)

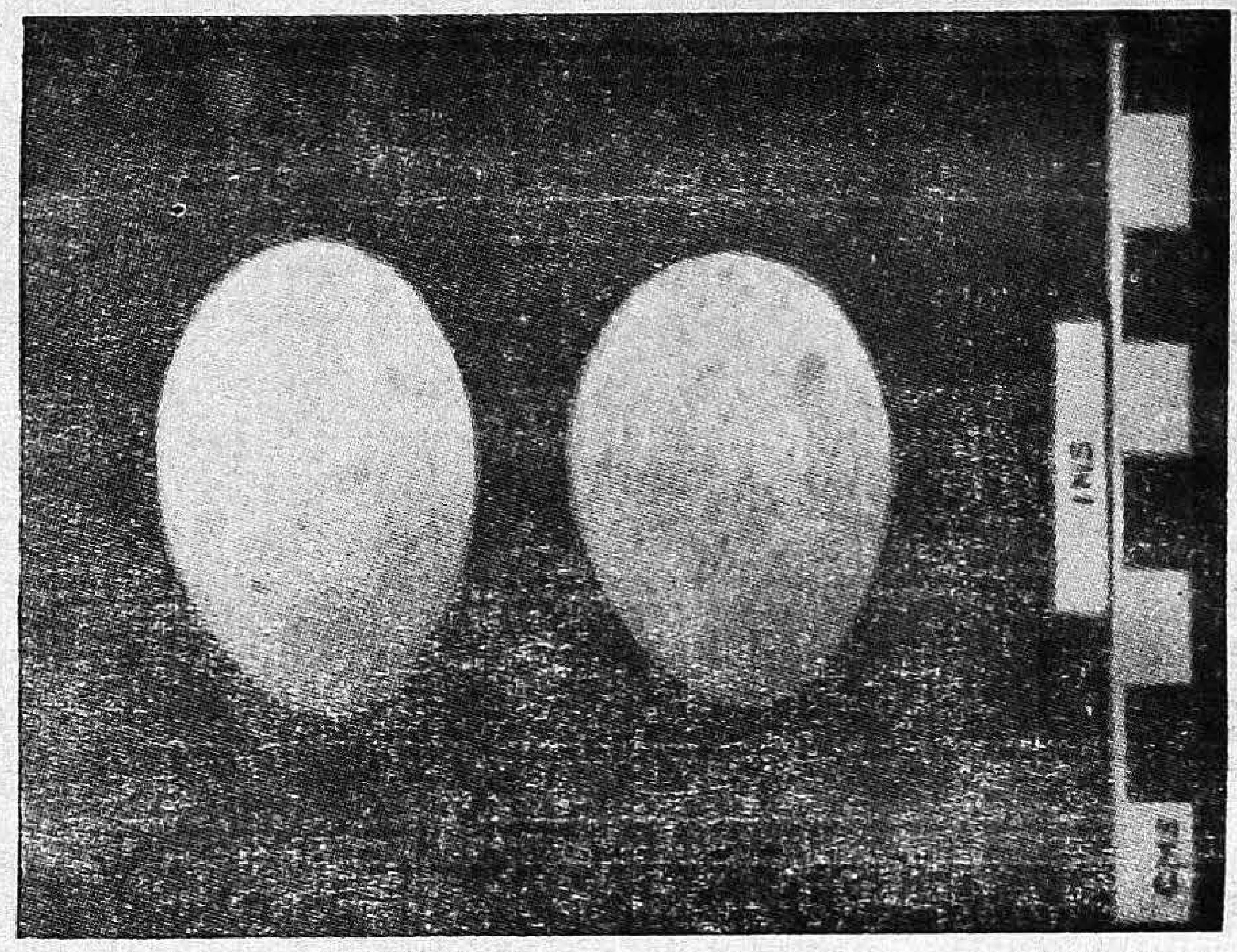

Figure 20. **Amaurornis phoenicurus phoenicurus** (Pennant). (The White-breasted Water hen). (Eggs)

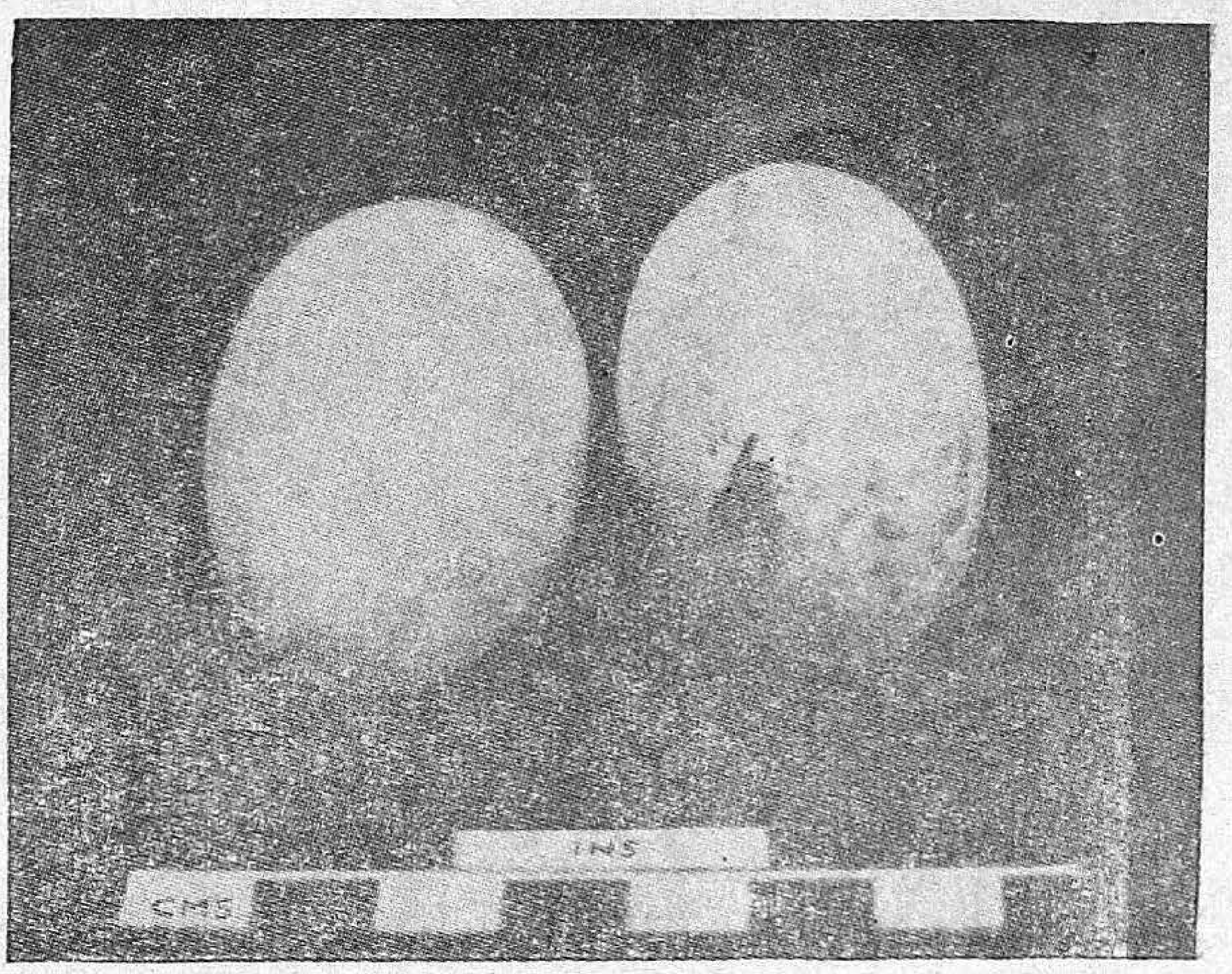

Figure 21. **Gallicrex cinerea cinerea** (Gmelin)
(The Kora or Water Cock)

This species breeds chiefly during the monsoon months. Practically throughout its range of occurrence the breeding season of the Water Cock extends from the end of June to the beginning of September, most eggs being laid towards the end of July, and the beginning of August. In Ceylon, these birds breed during May and possibly during July and August (and also during January and February), and in the Maldives during June and July.

The nest is built low down in dense reeds at the water's edge or resting on the leaves of water plants further inside the swamps or in rice fields. The nest is a large, concave or deep, cup-shaped pad of sedges, rush leaves, grass, etc., sometimes domed over with the surrounding substrata to form a bower. The nest is generally placed in tangled reed beds in large swamps and jheels, or amongst standing rice plants in an inundated rice field. When built in reeds the nest is a bulky structure of weeds and rushes, but sometimes it is very flimsy and badly put together.

The eggs number three to six (sometimes up to eight or even nine). They are rather long ovals, closely resembling those of the Coot. In texture, they are fine and compact, but they are less glossy than the eggs of most species of this family. The ground colour varies from almost white through pale pink or yellowish stone colour to deep brick pink. The markings consist of longitudinal blotches and spots of reddish brown fairly profuse all over, but slightly denser at the broad end. The markings are sometimes brownish red or maroon. In some eggs the ground colour is more pinkish ; in others more cold and stone-like. Most of the eggs, besides the specks and spots, exhibit a few blotches of the same colour ; there is a tendency for these blotches to be more dense towards the large end. The eggs vary somewhat in size and in the intensity of the markings. In shape, they are moderately elongated ovals, in some cases almost perfectly symmetrical at both ends, in others slightly compressed or pointed towards one end. The colour of the markings also varies. Commonly the eggs are thickly blotched and streaked with brownish red, or, in some cases only slightly reddish brown and purple, or, again in some cases deep red. The markings are generally most numerous towards the larger end where they form in many cases a mottled or coloured cap. In some specimens, both sets of colours, namely, the brownish red and purple, are slightly dingy ; in others, they are extremely bright and beautiful. In some eggs the markings are very bold and comparatively widely separated ; in others, the whole surface of the egg is closely mottled and freckled all over so as to leave but little of the ground colour visible. At times, many of the markings are encircled by a broad halo or nimbus of the same colour, but much lighter in shade. Commonly, all the markings are streaky and the whole egg is densely streaked in a mottled and clouded manner with moderately pale brownish red, in which the streakings are intermingled with patches of deeper and more purplish red.

The eggs vary in length from 40·1 mm. to 45·7 mm. and in breadth from 28·4 mm. to 33·0 mm. The average size of one hundred eggs is reported to be 40·2 mm. × 31·0 mm. (Baker.)

Specimens in the collection :

Two eggs (i) Length: 42 mm.
Breadth : 32 mm.
Colour : Yellowish brown with dark brown blotches.

(ii) Length : 46 mm.
Breadth : 32 mm.
Colour : Same as above.

Gallinula chloropus indicus Blyth.

(The Indian Moorhen.)

The Indian Moorhen occurs throughout India, Bangala Desh, Pakistan, Nepal and Ceylon, and is found chiefly in the low lands, but also breeds up to considerable elevations in the outer Himalayas and Peninsular hills, ascending up to 2,400 metres in Kashmir and up to about 2,000 metres in the Nilgiris. It occurs as a resident species and partly as a winter visitor, when its numbers everywhere get vastly augmented. These birds frequent mostly jheels and swamps with beds of sedges and bulrushes and tangles of lotus and other floating vegetation, interspersed with sheets of open water. They are also common in ponds bordered with reeds, village tanks and ditches.

The Moorhen breeds pretty well throughout India, alike in the plains and in the hills, as high as Ootacamund in the Nilgiri, and up to 6,000 feet in the Himalayas. In Kashmir where it is perhaps the commonest water bird it breeds abundantly on the Dal, Anchar and other lakes during May to August, chiefly in June and July. In the Peninsula it breeds during the South West monsoon months of July, August and September ; in Ceylon, the season ranges from March to August. Sometimes two successive broods are raised.

The nest varies much in size and situation. It is generally a bulky mass of sedges and bulrush leaves placed in a dense reedbed a few inches above water level, rarely even in a tree near or overhanging water. However, sometimes there is no nest at all, but only a quantity of rush and rice stems bent down *in situ* to form a platform to support the eggs Often it is placed in some tuft or tussock of grass in a swamp, ditch or pond. Generally, the nest is a rather ragged affair, the lower portion rotting in the water and the upper part very carelessly put together consisting of dry or half-dry straw, rush or reed and not uncommonly an admixture of weeds.

The eggs number from five to twelve, pale yellowish to warm buff stoe colour, thinly or evenly spattered all over with small blotches of dark reddish brown. The ground colour is a pale yellowish stone colour, rarely almost wihte or equally rarey warm buff, the markings consisting of small blotches of pale dull reddish sparsely scattered about the larger end. The shell is compact and firm, wth little or no gloss. In shape the eggs are normally moderately broad, nearly perfect ovals, slightly compressed towards one end, but somewhat more pointed or elongated specimens occur. The larger markings are not infrequently surrounded by a reddish halo and the general appearance of the egg is very a commonly streaky, owing to the markings being often more or less grouped along irregular lines running lengthwise with the egg.

The eggs vary in length from 36.4 mm. to 45.5.mm., and in breadth from 29.5 mm. to 31·8 mm.; the average size of seventy one eggs measured is reported to be 41·4 mm. X 29.6 mm (Baker).

Specimens in the collection :

One egg : Length : 44 mm.
Breadth : 30 mm.
Colour : greyish brown with blackish brown spots.

Porphyrio porphyrio poliocephalus (Latham).

(The Indian Purple Moorhen).

This species occurs as a resident as well as possibly a local migrant throughout the plains of India wherever there are swamps, lakes and sufficient water. Its distribution, ranges from Pakistan and Southern Baluchistan in the west, eastwards through Assam, Manipur and Bangala Desh and south throughout the Peninsula, mostly in the Terai and in the plains. It is reported to be very rare in Kashmir, but is common in Ceylon. It frequents dense reed beds around large swamps and jheels.

The Purple Moorhen breeds throughout its range chiefly during the rainy season, i.e., during the period of the South-west Monsoon, from June to September, but it has been known to breed during other months also locally in different localities, for instance, in Andhra Pradesh in November and February, in Mysore during November, December and January and in Ceylon from January to May and occassionally during July and August.

The nest is a rather marsive structure composed of rushes, reeds and water weeds placed either in among dense reeds or on floating lilies and water weeds. It is a large pad of firm interwoven rush, paddy or grass stems, paced on a floating raft of matted weeds up to a metre or so above the water level among partially submerged bulrushes and reeds. The nest is usually placed in amongst thick grass and rice. Sometimes it is on the ground and sometimes though not free, it is floating.

The eggs vary in number from three to seven, but four or five form the normal clutch. They are typically long ovals and in colour they vary from pale yellowish stone or pale pinkish to reddish buff and are spotted and blotched with reddish brown. The markings consist of small blotches and spots of reddish brown scattered sparsely over the ntire surface.

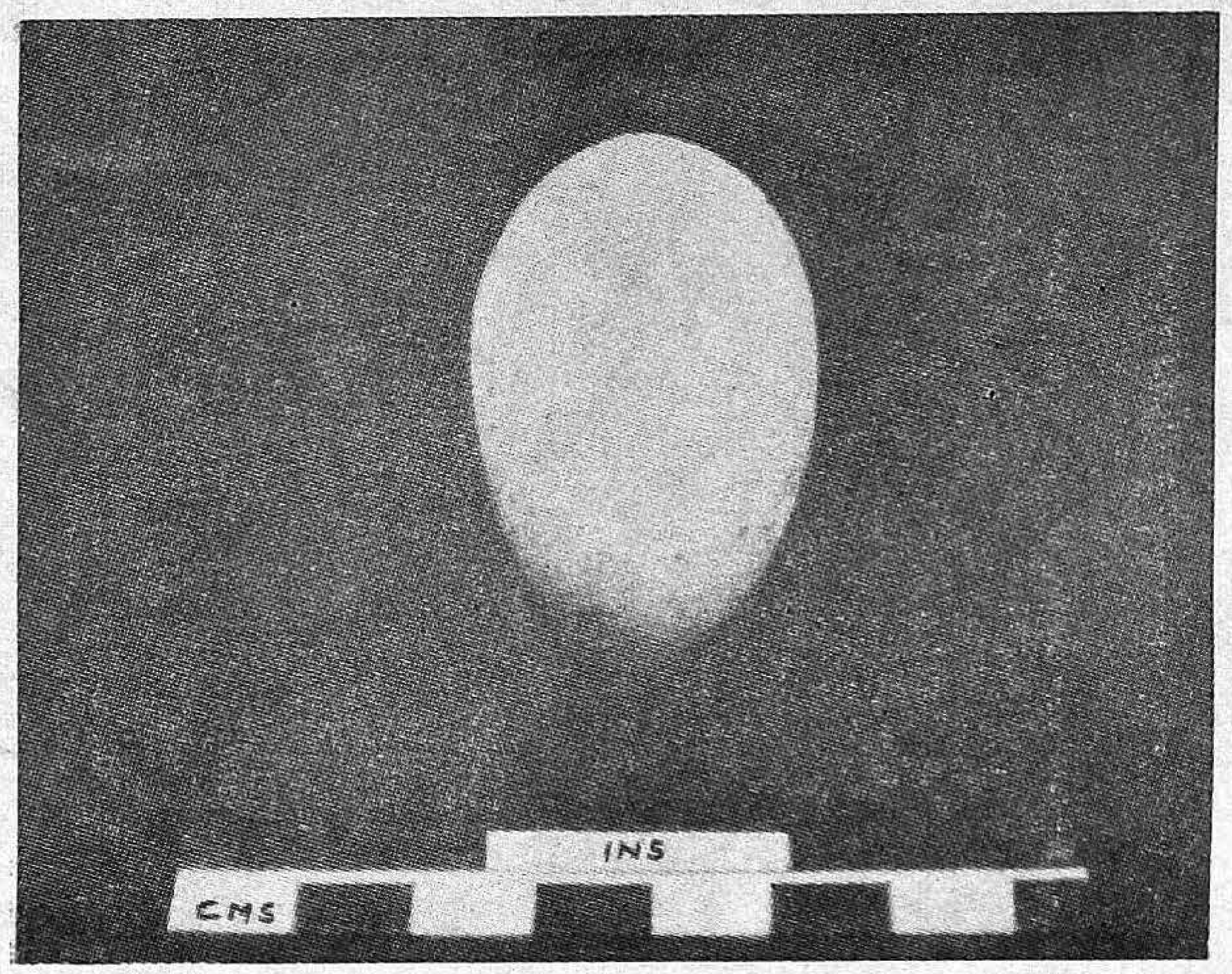

Figure 22. **Gallinula chloropus indicus** (Blyth)
(The Indian Moorhen)

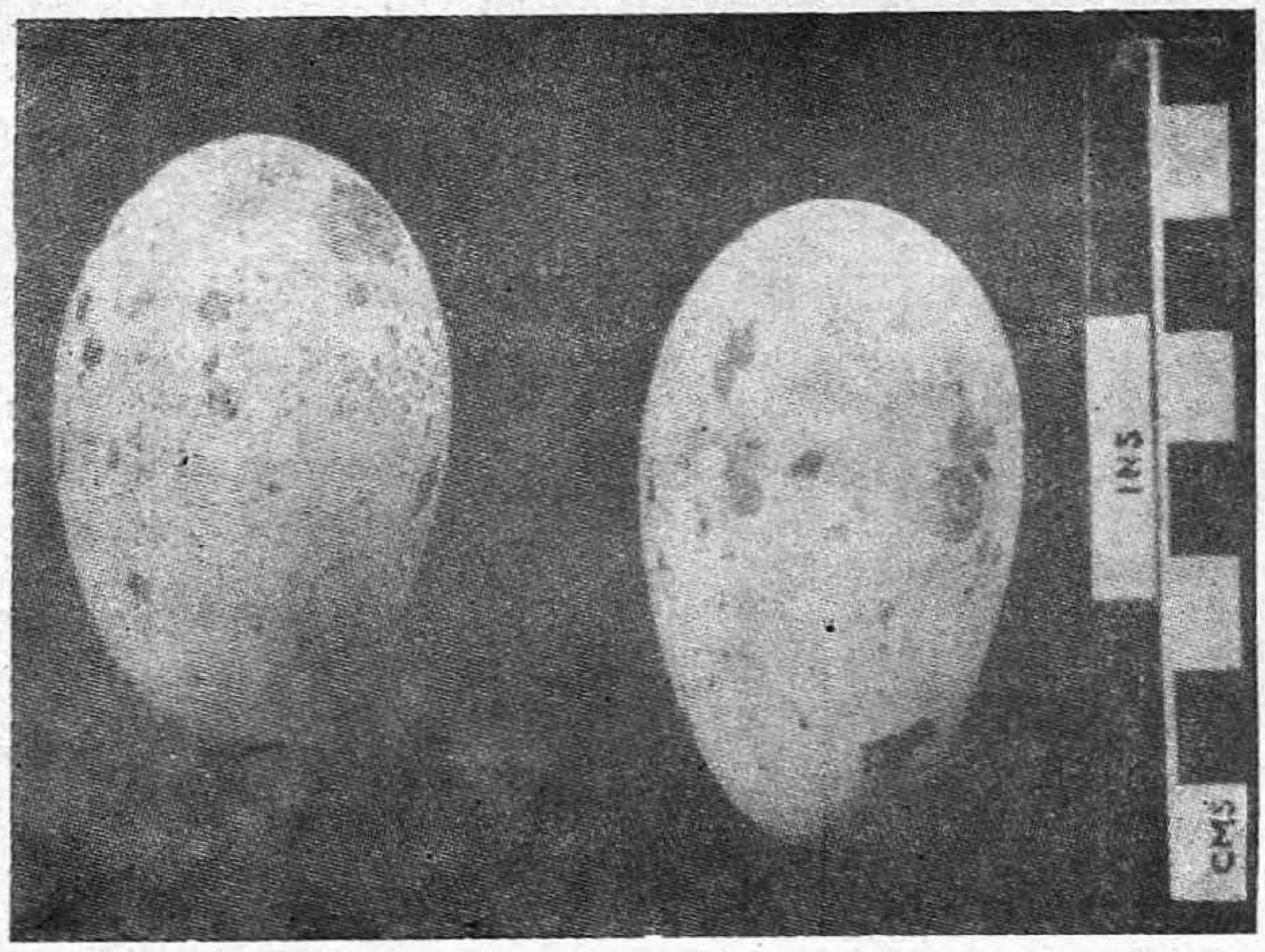

Figure 23. **Porphyrio porphyrio poliocephalus** (Latham)
(The Indian Purple Moorhen)

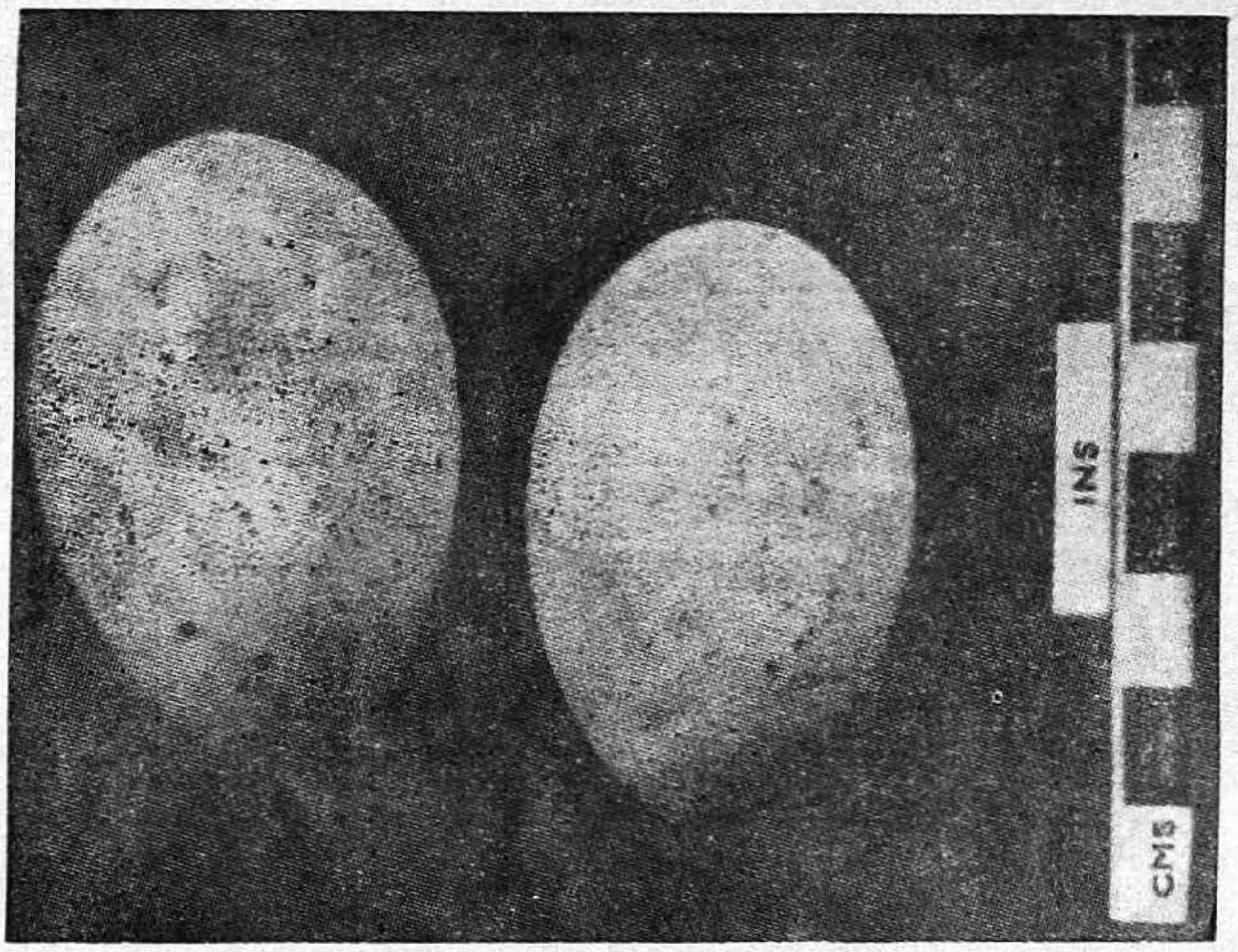

Figure 24. **Fulica atra atra** (Linnaeus)
(The Coot)

The eggs of this species vary very much in size, the cubic content of some eggs being fully double that of others. Normally they are broad and perfect ovals, obtuse at both ends, not unlike a hen's egg in shape. But some eggs are much more pointed towards one end, and considerably elongated varieties also occur.

When fresh the eggs are pretty, the ground colour varying from a pale pinkish stone, to a beautiful pure salmon-pink, but the rosy tint disappears rapidly. The eggs are always pretty thickly spotted, blotched and occasionally streaked with a rich, almost lake red besides which there are a number of somewhat pale purple blotches, clouds and spots. When quite fresh they are very lovely eggs, but the ground colour and markings alike fade in the course of a comparatively short time.

The shells are firm and compact, but the eggs have little or no gloss.

The eggs vary in length from 41.7 mm, to 54.6 mm. and in breadth from 31.2 mm. to 36.8 mm. The average size of one hundred eggs 50.5 mm. x 35.7 mm. (Baker).

Specimens in the collection :

Three eggs : (i) Length : 47 mm.
Breadth : 35 mm.
Colour : Pale greyish brown with blackish spots.
(ii) Length : 57 mm.
Breadth : 34 mm.
Colour : Cream-coloured, with blackish and brownish patches and pale greyish spots.
(iii) Length : 52 mm.
Breadth : 35 mm.
Colour : Cream-coloured, with blackish and brownish patches and pale greyish spots.

Fulica atra atra Linnaeus.

(The Coot).

The Coot breeds throughout India during the rainy season, in large jheels and lakes. They make compact, well-built nests composed of rushes. low down among reeds. The nest is often massive and conspicuous having a shallow, but ample depression for the eggs to rest in. The depression is often lined with rather finer material than those made use of in the exterior.

In the plains, eggs are laid only in July and August, but in the hills these birds breed in May and June.

The eggs vary in number from five to ten, but seven or eight eggs are found most commonly.

The eggs of this species vary very greatly in size and shape, but are very uniform in colouration and character and size of the markings. In shape, they are perhaps typically somewhat broad ovals, slightly compressed towards one end ; but eggs pointed towards both ends seem common. The eggs have little or no gross. The ground colour is a pale yellowish or brownish grey, or pale buffy stone colour, less often a rather deeper buff or *cafe-au-lait*, and the whole surface is covered with scattered tiny spots and freckles of black, or blackish brown ; besides these, there are rather large underlying marks of neutral tint, scattered sparingly over the surface.

The eggs vary from 45.2 mm. to 58.4 mm. in length and from 31.8 mm. to 38.1 mm. in breadth ; but the average of fifty eggs is reported to be 50.3 mm. x 35.6 mm.

Specimens in the collection :

Four eggs: (i) Length : 55 mm.
Breadth : 36 mm.
Colour : Greyish white, with sparsely set, fine, black dots.
(ii) Length : 50 mm.
Breadth : 36 mm.
Colour : Greyish white, sparsely spotted with black.

(iii) Length : 56 mm.
Breadth : 38 mm.
Colour : White, with fine as well as larger black spots.
(iv) Length : 52 mm.
Breadth : 35 mm.
Colour : White, with fine as well as larger black spots.

Family OTIDIDAE

Sypheotides indica (J. F. Miller).

(The Lesser Florican or Likh.)

This small Bustard is found as a resident or a local migrant ; it also occurs as a nomadic species in different areas during the rainy season. It is fairly common in suitable localities in Pakistan (southern Sind), Punjab, Rajasthan, Gujarat (including Saurashtra and Kutch) and southwards through the Peninsula to Mysore and Madras; it also extends to Kerala as a straggler and occurs as a wanderer eastwards through Uttar Pradesh, Nepal, Bihar, Orissa and West Bengal. These birds usually occur in areas covered with tall grassland with scattered bushes and standing crops of cotton and millets, chiefly in the plains, but they also occur in the Nilgiris as a vagrant up to an altitude of about 1000 metres.

This species breeds chiefly during July, August and September, as soon as sufficient grass cover becomes available in otherwise dry areas. In Southern India they breed from July to November, occasionally as late as at January, whilst over the rest of its habit September and October are probably the two months in which most eggs are laid, though a good many birds start nesting in October. They breed exclusively, or almost so, in grass, fields, and prefer rather thin patches, often small in extent, to wide stretches with long, dense grass. There is no special nest.

The eggs are normally four in number, sometimes three or five ,and are laid on the bare ground, with no pretence of a nest and even without any depression, in some bare patch of short grass or in crops.

Typically, the eggs are very broad ovals with a feeble tendency to be pointed at one end; but some are nearly spherical. The shell is closely pitted throughout with minute pores, is stout but smooth, and has always a slight, and at times a brilliant, gloss.

The ground colour is often some shade of olive brown, but varies from a clear, almost sap-green, through various shades of olive-green, drab and stone colours, to a darkish olive-brown. The eggs are variously mottled, streaked and blotched with brown.

The markings consist of brown, reddish or olive-brown blotches, spots or streaks, occasionally with a purplish tinge, in some eggs very faint and feeble, obsolete or nearly so, a mere mottling ; in others conspicuous and strongly marked. In character they are generally cloudy streaks more or less confluent at the broader end (from which they run down parallel to the major axis), and more or less obsolete towards the smaller end. Occassionally however, they are pretty uniformly scattered over the whole surface of the egg.

In size, the eggs vary from 45·0 mm. to 54·3 mm. in length, and from 38·1 mm. to 43·2 mm. in breadth. The average size of fifty-seven eggs is reported by Baker as 49·1 mm. x 41·3 mm.

Specimens in the collection :

One egg : Length : 45 mm.
Breadth : 40 mm.
Colour : Uniformly bronzy brown.

ORDER CHARADRIIFORMES

Family JACANIDAE

Hydrophasianus chirurgus (Scopoli).

(The Pheasant-tailed Jacana).

The Pheasant-tailed Jacana is found all over India, as a resident species, moving locally with conditions of flood and drought. Its distribution extends throughout India, including Assam and Manipur, Pakistan, Bangla Desh, Nepal and Ceylon. In summer it ascends normally up to 1,500 metres in the Kashmir Valley and the outer Himalayas; but in winter these birds mostly descend to the plains.

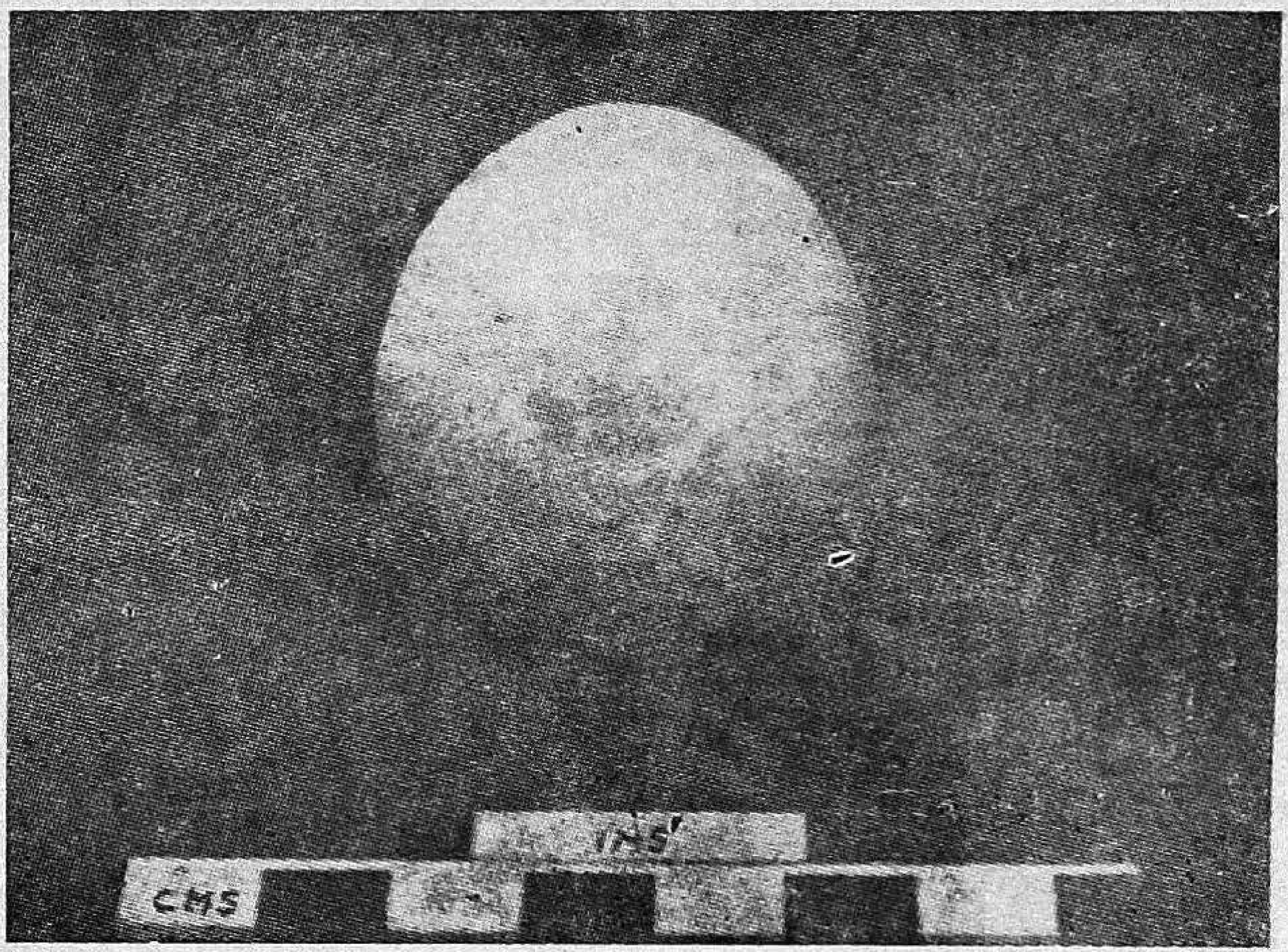

Figure 25. **Sypheotides indica** (J. F. Miller)
(The Lesser Florican or Likh)

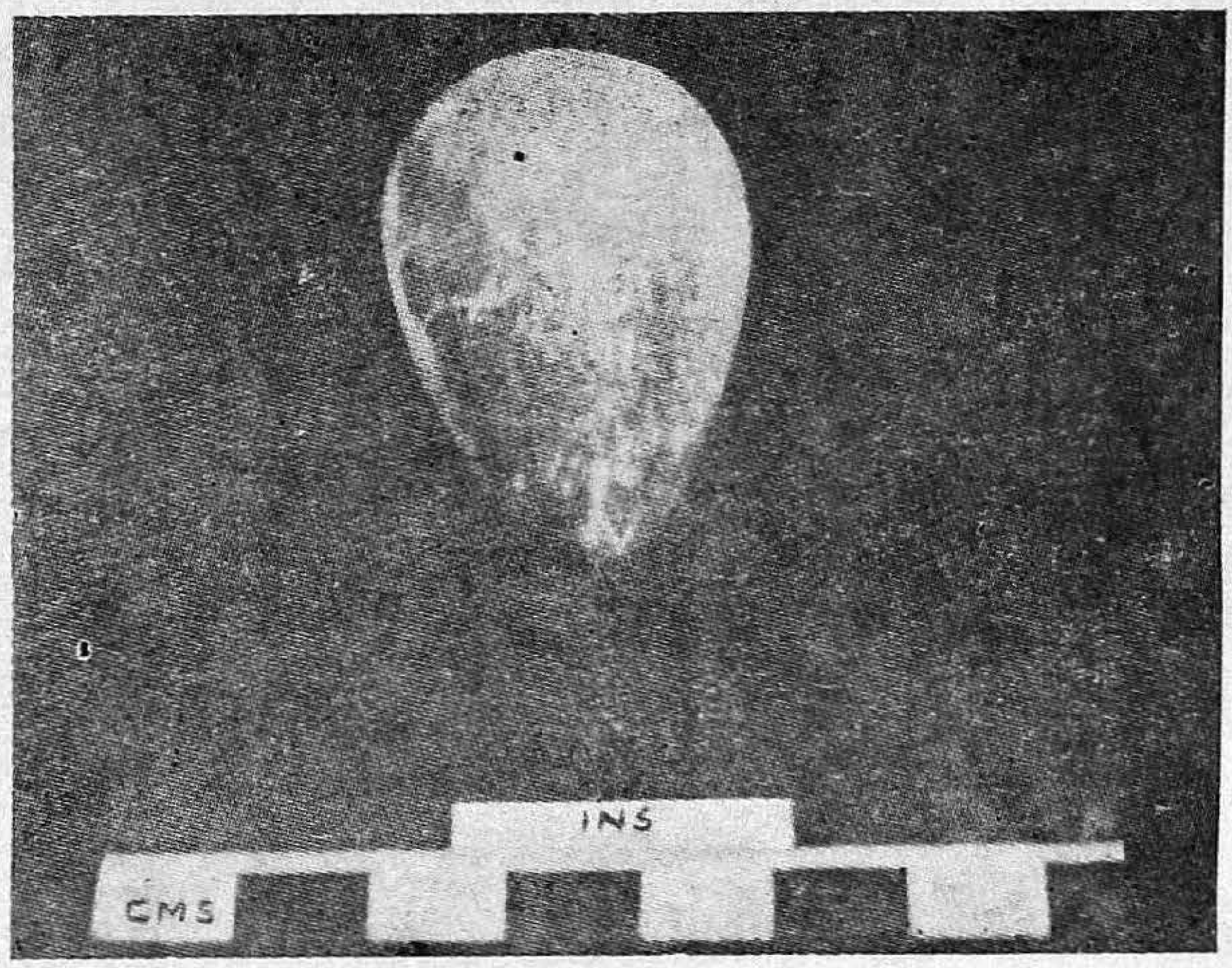

Figure 26. **Hydrophasianus chirurgus** (Scopoli)
(The Phaesant-tailed Jacana)

This species breeds throughout the plains of India wherever there is sufficient water and almost considerable elevations in the Himalayas, being common on the Kashmir lakes and occurring also in the Abor Mishmi Hills. It breeds in small ponds and village tanks as well as in huge swamps and lakes. The breeding season in Kashmir is from about the second week of May up to July ; in the plains, during the South-West monsoon, principally from June to September ; in Ceylon, mainly March to July, but also in January.

The nest is similar to that of the Bronze-winged Jacana (*Metopidius indica*) but often very small and flimsy. It is an insignificant, skimpy pad or raft of grass or weed stems freely floating or resting on partly submerged vegetation (Hydrilla). Sometimes the eggs are laid directly on the leaves of the water lily (*Singara*) or the Water Hyacinth (*Eichhornia*).

The eggs are invariably four in number peg-top-shaped, glossy greenish bronze or rufous brown, unmarked. The colour varies from a pale yellow bronze or olive brown to a deep chocolate-purple, and the egg is always highly glossy. In shape, they are peg-top-like, lying in the nest point to point ,like the eggs of the snipe. In texture the shell is compact and hard and, especially when fresh, has a fine gloss.

The average size of one hundred eggs is 37·4 mm. x 27·6 mm. (Baker).

Specimens in the collection :

One egg : Length : 39 mm.
Breadth : 28 mm.
Colour: Dark brown, highly glossy.

Metopidius indicus (Latham).

(The Bronze-winged Jacana.)

The Bronze-winged Jacana is confined to the more moist portions of the country, and is very rarely, if ever, seen in the drier portions of the North-West Provinces, in the Punjab, Sind and Rajasthan. It never ascends the hills, being a bird of the plains.

The Bronze-winged Jacana breeds during the rainy season wherever it is found, most eggs being laid in July and August. The nest, generally a large one, is rather a flimsy structure, in the form of a platform composed of rushes and waterweeds, twisted round and round so as to form a circular pad, from ten to twenty inches in diameter, with a central depression two or three inches in depth, and is commonly placed half submerged on a bud of lotus leaves or lily leaves in some rush-infested corner. Occasionally the nest is more bulky and well lined with dry rushes. The normal clutch of eggs is four, but exceptionally there may be as many as six or seven eggs in a clutch and about eight to ten are reported as the maximum ever recorded.

The nest is of various sizes ranging from a foot to nearly two feet in diameter and is made of weeds roughly put together. The nest is often made on the water surface or sometimes on any is land near the water's edge. Rarely, the nest may be on swampy ground in the midst of a clump of thick rushes, surrounded on all sides by the water of the jheel. In each situation, a sheltered spot is chosen, offering concealment. A favourite resort for the nest is among thick-growing lotus leaves. In shape, the eggs are moderately broad ovals a good deal pointed towards one end, and especially when fresh, have the most superb-lustre of any egg. This extraordinary high polish resembles most the finish of highly glossy lacquered surface, but grows somewhat less bright after the eggs have been kept some time, but even when years have passed away, they still remained the glossiest of the eggs of Indian birds.

The ground colour varies from light yellowish stone colour to buff or rufous brown or even deep red brown ; in some it may be a reddish olive brown and in others a very deep rufous or at times olive brown. The markings consist of numerous long, blackish brown or

lines and intricate scrawls, here and there paling to a deep reddish brown, finer or coarser and intertwined and entangled as it were, one with another in an inextricable manner. Here and there a few spots and even blotches are noticeable, but the general pattern consists of the irregular intertwining lines described above.

The eggs vary in length from 33·0 mm. to 39·4 mm., and in breadth from 24·4 mm. to 27·4 mm.; but the average size of fifty eggs is 37·3 mm. by 26.2 mm.

Specimens in the collection:

Three eggs : (i) Length : 36 mm.
Breadth : 27 mm.
Colour : Brown, with blackish lines and freckles polished.
(ii) Length : 34 mm.
Breadth : 25 mm.
Colour : Bronzy brown with black lines and patches.
(iii) Length : 36 mm.
Breadth : 26 mm.
Colour : Bronzy brown with black lines and patches.

Family CHARADRIIDAE

Subfamily CHARADRIINAE

Vanellus indicus indicus (Bodd.)

[Lobivanells indicus indicus (Bodd.)]

(The Indian Red-wattled Lapwing.)

The Indian Red-wattled Lapwing occurs throughout India and Ceylon as a reisident species, but in Certain localities it occurs as a local migrant, migrating vertically (e.g., in North-Baluchistan and North West Pakistan). During the monsoon it is found widely distributed in suitable habitates. It is found all over India, Pakistan and Bangla Desh and southwards through the Peninsula to Kanyakumari and up to altitude of 1800 metres in Kashmir, Kulu Valley and Nepal. It is reported to be very common in the Nepal Valley The birds generally frequent the neighbourhood of water in open country and cultivated areas and are common in the vicinity of jheels, tanks rivers, ditches and puddles.

The breeding season ranges from March to August-September: however the peak period varies locality. In many localities it breeds principally in April, but many birds lay during March and others during May. June and July, They bread throughout the area in habit in the plains, while in the hills of Southern India they have been recorded at 5,500 feet and in tne Himalayas up to about 5,000 feet' or very rarely 6,000 feet.

They lay their eggs almost anywhere, provided there is water somewhere in the neighbourhood. Banks of rivers, edges of swamps of ponds and well irrigated gardens are their favourite nesting sites until the rainly season sets in. After the rains have well commenced they prefer drier situations for laying their eggs.

The birds do not build any definite nests, The nest consist of the usual scratching made in the ground by the birds, sometimes lined with mud pellets or goat's dropping end borded with bits or dry cowdung or pebbles. Very generally the eggs are laid in a simple depression in the earth, but not in frequently the hollow is surrounded by a circle of stones of a little ridge of sand. Sometimes, the so called nests are nearly semi-spherical depressions in the sand (just large enough to hold four eggs.) and are to a certain extent lined with tiny piece of flood-deposited wood fragments, straw and grass. The common nesting sites are waste and stony land, fallow fields, dry beds of tanks and pond and shingle banks and sand beds of river and stream. It is also usual to find them laying their eggs amongst the ballast of a railway track. Often they lay at considerable distance from water in waste land or in fallow or ploughed fields.

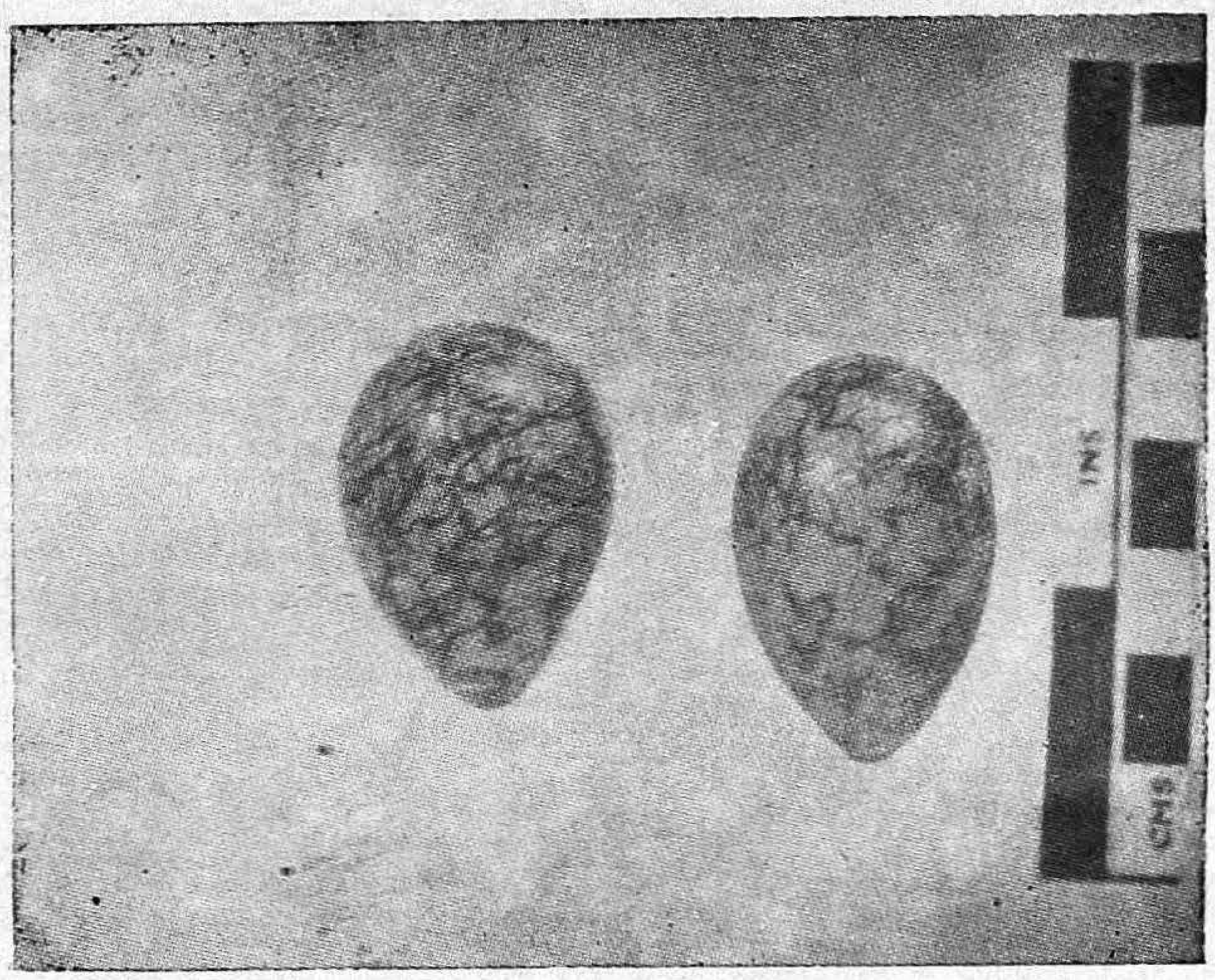

Figure 27. **Metopidius indicus** (Latham)
(The Bronze-winged Jacana)

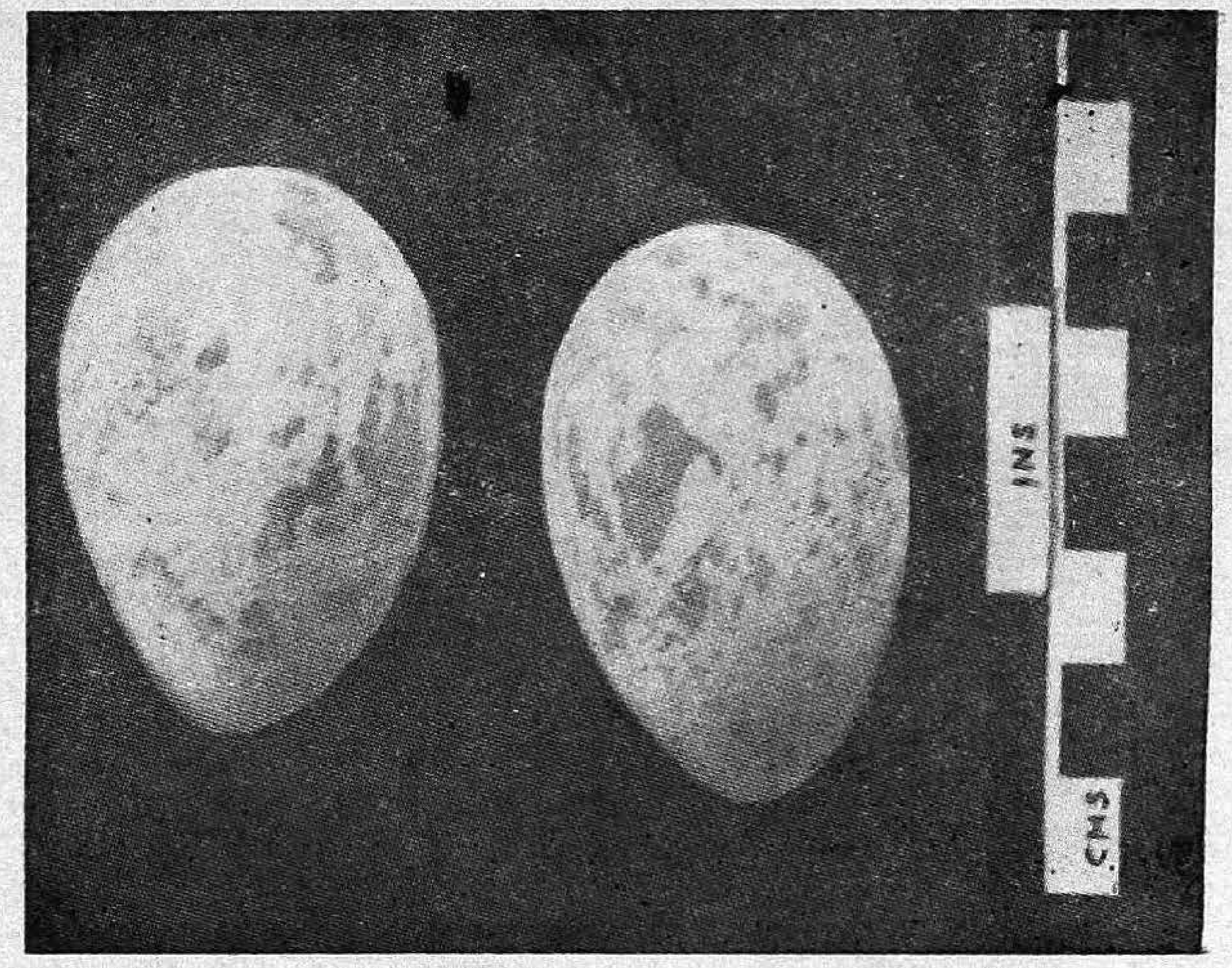

Figure 28. **Vanellus indicus indicus** Boddaert
(The Indian Red-wattled Lapwing)

Four eggs are invariably laid which are like those of the Spur-winged Plover. but often more boldly and handsomely marked-The eggs are pyriform or peg-top-shaped and are of the typical Plover type normally broad and obtuse at one end and much pointed towords the othe end. Oval, truncated and greatly elongated varies also occur. They are rather variable in colouration, but are mostly of some shade of greyish brown or drab coloured and blotched with blackish. The ground colour varies as in all Plover' eggs, in some it is a clear, pale olive green, in some a yellow and in yet others a reddih buff or reddish brown, while occasionally it is almost coffee-coloured.

The markings are intensely deep brown or black, and there are blotches, streaks spots and clouds thinly or thickly scattered over the whole surface. The ground colour and the marking present an endless variety in their shade intensity and character. Besides the primary markings most of the eggs exhibit also underlying clouds spots and streaks of pale inky purple. The eggs have scarcely any gloss.

Taken as a whole, the markings of the eggs of this species are bolder and denser than in those of either the Yellow-wattled Lapwing (*Lobipluvia malabarica*) or the Spur-winged Plover (*Hoplopterus ventralis*).

The eggs vary in length from 36·8 mm. to 47·0 mm., and in breadth from 28·7 mm. to 33·0 mm. The average size of one hundered eggs is reported to be about 42 mm. by 30 mm.

Specimens in the collection :

Three eggs :

(i) Length : 42 mm.
Breadth : 30 mm.
Colour : Brownish, with black spots and blotches.

(ii) Length : 41 mm.
Breadth : 31 mm.
Colour : Creamy brown, with black, grey and blackish brown blotches.

(iii) Length : 42 mm.
Breadth : 30 mm.
Colour : Creamy brown, with greyish black and blackish brown blotches.

Vanellus spinosus duvaucelii (Lesson).

(=Charadrius ventralis Wagler).

(=Hoplopterus ventralis Wagler).

(The Spur-winged Plover).

The Spur-winged Plover occurs as a resident species practically over the whole of Eastern and Central India, Bangla Desh, Assam, Manipur, Bengal, Bihar, Orissa, Andhra, northern and Eastern Madhya Pradesh; it occurs also in the western part of Uttar Pradesh and in Nepal and Sikkim. Its distribution does not extend to Kashmir as stated by Baker. This species is resident, but exhibits some nomadic movements seasonally.

The Spur-winged Plover breeds both on the bigger riversand smaller streams, penetrating far into the hills. It usually frequents sand banks and shingle beds in flowing water. Normally it is not found anywhere away from running water and avoids jheels or stagnant waters.

The breeding season lasts from March to June, but most eggs are laid during March and early April. The eggs are laid in the bare ground in a shallow depression or scrape made in an exposed sand bank or shingle bed quite unprotected by stone or bush. The hollow scratched for the eggs may be either in shingle or in sand, but very often the eggs may be laid also on rocks or among quite large boulders where a little sand or small shingle has lodged. The birds usually prefer shingle and rocks to sand but occasionally they may be found breeding in open marshlands along with species of terns and Pratincoles.

The eggs are normally four in number, although sometimes only three eggs are laid. They are very similar to those of the Red-wattled Lapwing, but on the whole duller and more greyish or olive brown in general tone and rather more longish in shape. The eggs are olive or pale yellowish stone or dull greyish brown in colour, blotched and spotted with shades of brown and black. The markings consist of blotches, spots and smudges of black or blackish brown and other more inconspicuous, underlying markings of lavender. The ground colour of the eggs varies considerably. The most common colour is pale stone-brown, at times more or less tinged with olive, and occasionally with a faint pinkish shade. Sometimes most of the primary markings are collected in a dense zone near the larger end. The normal type of the egg is very pointed, but some are much less so than the others.

The eggs vary in length from 36·1 mm. to 45·2 mm., and in breadth from 28·4 mm. to 33·0 mm. ; the average size of one hundred eggs is reported to be 41·1 mm. x 29·4 mm. (Baker).

Specimens in the collection :

One egg :

Length : 41 mm.
Breadth : 30 mm.
Colour : Creamy brown, with black spots.

Vanellus malabaricus (Boddaert).

[Lobipluvia malabarica (Boddaert)].

(The Yellow-wattled Lapwing).

The Yellow-wattled Lapwing occurs all over India and Ceylon, mostly as a resident species, with local migratory movements away from the wetter areas in monsoon. In many regions it occurs only as a winter (dry-season) visitor. Its distribution extends as far north-west as Lower Sind but not in Upper Sind of the Trans-Indus area, and eastwards through North India to West Bengal and Bangala Desh and occasionally in Nepal Valley also. Southwards, its distribution extends throughout the Peninsula and to Ceylon (dry zone). These birds usually frequent barren waste land, stubbles and fallow fields in drier biotope than the Red-wattled Lapwing and are much less dependent on the proximity of water. Even near jheels, they keep to higher zones away from swamps and muddy shores.

Over the greater part of its range, this species breeds from March to the end of June, and, occasionally, as in Ceylon, upto August. The nest consists of an unlined shallow depression or scrape in dry, open, sun-baked fallow or waste land, sometimes encircled by a parapet of pebbles or mud pellets. The depression is about three or four inches in diameter and an inch in depth, often with the mud pellets scraped up against the margin all round, so as to deepen the nest.

The eggs are always four in number, of the normal peg-top shape of Plover's eggs usually arranged in the nest with the pointed ends inward so as to occupy the least space. The ground colour of the eggs varies from buff to olive-stone colour and they are prettily but irregularly blotched with dark brown and purplish grey. The markings consists of spots, streaks and moderate-sized blotches of deep brown, interspersed with spots and streaks of pale olive brown and dingy inky purple. The eggs are devoid of gloss.

Although the above colouration is normal in most instances, the eggs of this species form one of the most striking instances of adaptation to environment, for in regions where red lateritic soil is present, the eggs are of an erythristic type; the ground colour of such eggs is a bright brick-pink, exactly the same colour as that of the soil on which they are laid, the bold, black specks and spots resembling the black nodules which lie scattered everywhere on the red laterite, thus exhibiting adaptive protective colouration to a high degree. It has been noticed that the dark eggs were laid on dark soil, while the red ones were deposited on the red laterite. Both eggs and young ones are admirably camouflaged on the bare ground. The red eggs when laid on the red laterite soil are so invisible that

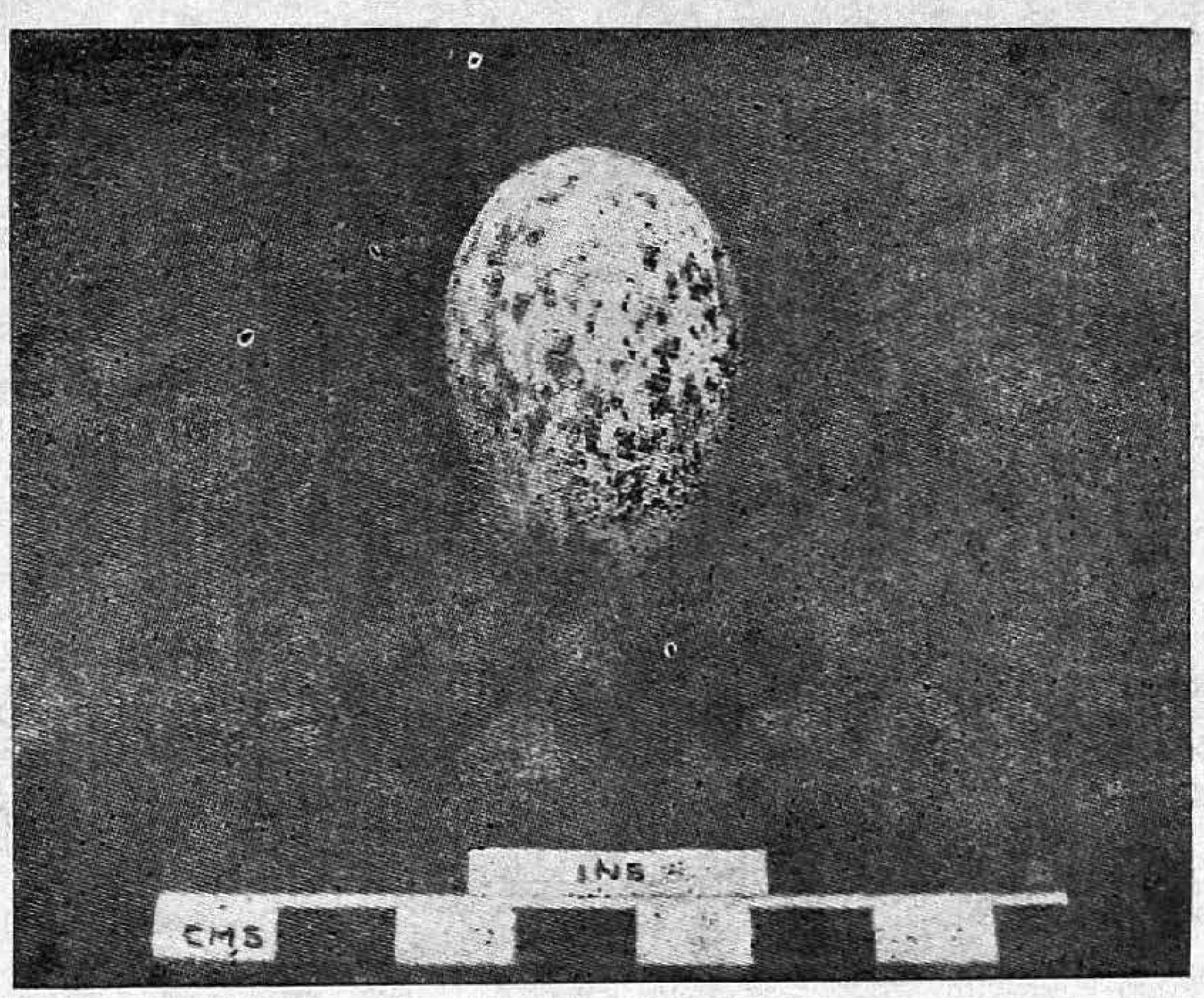

Figure 29. **Vanellus spinosus duvaucelii** (Lesson)
(The Indian Spur-winged Plover)

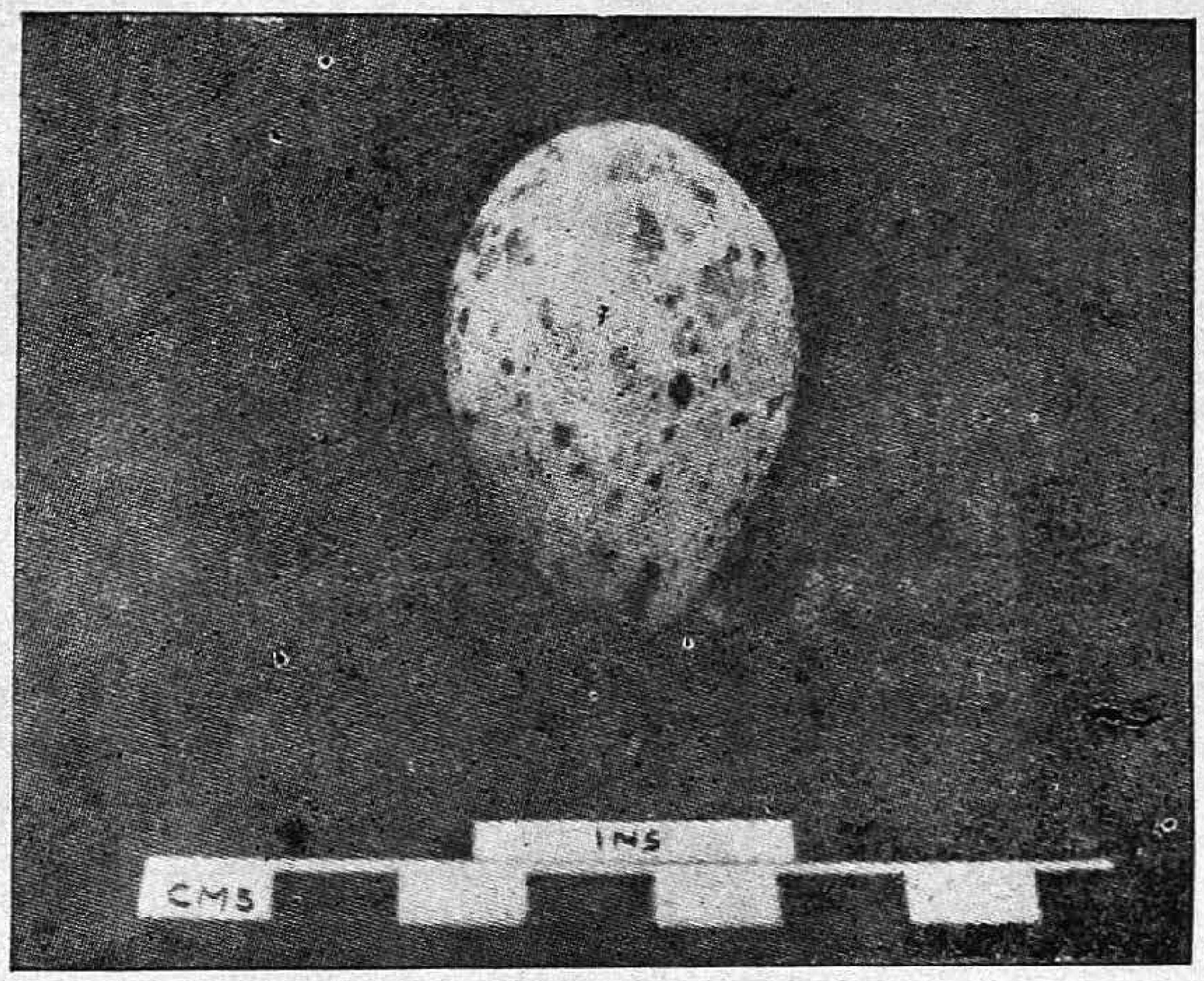

Figure 30. **Vanellus malabaricus** (Boddaeat)
(The Yellow-wattled Lapwing)

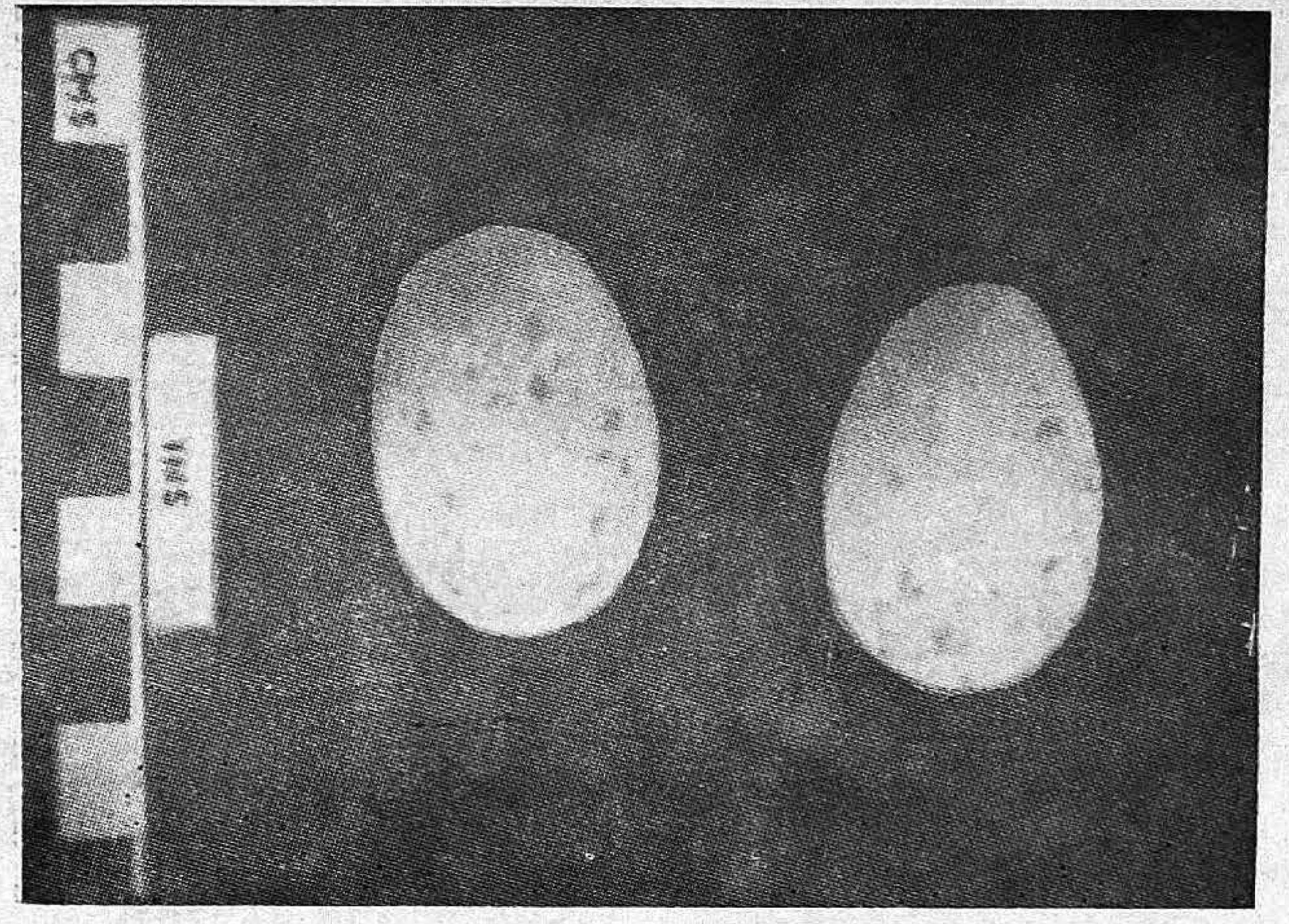

Figure 31. **Charadrius dubius curonicus** (Gmelin)
(The European Little-winged Plover)

they cannot be found unless a very careful search is made. On the whole the eggs of this species are markedly smaller, more neatly marked, paler and more yellowish than the eggs of the Red-wattled Lapwing.

The eggs vary in length from 34·3 mm. to 3·9 mm. and in breadth from 25·9 mm. to 27·9 mm. The average size of two hundred eggs is reported to be 36·4 mm. × 26·9 mm. (Baker).

Specimens in the collection :

One egg :

Length : 37 mm.

Breadth : 27 mm.

Colour : Brown, with black blotches and markings.

Charadrius dubius curonicus Gmelin.

(=**Aegialitis dubia curonicus** Scopoli).

(The European Little-ringed Plover).

The European Little-ringed Plover is very similar in its habits to the typical form (*Charadrius dubius dubius*), the Chinese Little-ringed Plover, but does not breed within Indian limits. In Europe, like the typical form, it breeds both on the sea shore and on inland waters making a similar nest and laying four similar eggs which are not quite so richly coloured and considerably bigger.

The nest is a tiny depression scraped in the ground not far from the water's edge in sand, or very fine shingle on some water-encircled bank, occasionally on some unfrequented part of the river bank itself. In this, on the bare sand or pebbles, four eggs are laid.

The nest is usually in the form of a shallow cup and placed generally in sand banks or sandy beds of rivers.

The eggs of this species are perfect miniatures of those of the Kentish Plover. They are of the usual Plover shape—broad ovals, elongated, and pointed towards one end. The shell is very fine and compact, but there is scarcely any gloss. The ground colour may be described as a drab, fawn or buffy stone colour, but it is sometimes pale greenish grey, and the eggs are thinly speckled and spotted or marbled with little hieroglyphic-like lines and figures of brownish purple, blackish brown or black ; while, besides these, secondary markings of a very pale inky purple which appear to underline those described above, are scattered here and there, sometimes very sparingly, and sometimes pretty thickly over the whole surface of the egg. Both the primary and secondary markings vary a good deal in different specimens in intensity of colour and in density ; but as a rule, the markings are most numerous towards the large end, where they at times form an imperfect and irregular mottled zone or even cap.

The eggs range in size from 32·8 mm. × 23·0 mm. to 27·3 mm. × 21·1 mm. The average size of one hundred eggs is reported to be 29·8 mm. × 22·1 mm.

Specimens in the collection.

Two eggs: (i) Length : 38 mm.

Breadth : 25 mm.

Colour : Cream-coloured, with blackish and clouded grey spots.

(ii) Length : 38 mm.

Breadth : 25 mm.

Colour : Creamy yellow, with black and clouded greyish spots.

Family ROSTRATULIDAE.

Rostratula bengalensis bengalensis (Linnaeus).

(=Rostratula capensis).

(The Painted Snipe).

This is a widely distributed species found in Africa, south of the Sahara up to Egypt, Madagascar, Southern Asia to Southern and Central China and Japan, Malay Peninsula to Sumatra, Java, Borneo, the Philippines and Formosa. In India and Ceylon it is found throughout the plains wherever the country is suitable and also in the swamps and lakes of the Himalayas up to an elevation of about 5,000 feet.

The Painted Snipe breeds throughout the year, but most of the eggs are laid during the rains from June to September, when food is most plentiful and both vegetation and water are found in abundance. The female is polyandrous. The nest is a pad of grass, soft rush-blades, weeds, etc, and may be placed almost anywhere within reach of water. Generally it is built on little islands in swamps, wet ditches and ponds, but sometimes it may also be found amidst crops and in fallow fields or even on dry grassland.

The normal number of eggs laid in a clutch is four, but five or even six eggs are not uncommon. The eggs are very beautiful. The ground colour varies from a yellow stone colour to a bright yellow *cafe-au-lait* and they are richly marked with fine bold blotches of vandyke brown, sometimes mixed with spots and lines of the same colour.

The average size of one hundred eggs is reported to be 35·9 mm. × 25·5 mm. (Stuart Baker).

Specimens in the collection :

One egg : Length : 35 mm.
Breadth : 26 mm.
Colour : Dull brown, with black blotches.

Famiy BURHINIDAE.

Burhinus oedicnemurs indicuus (Salvadori).

(The Indian Stone Plover).

The Indian Stone Plover breeds principally from April to June and casually from January to August but the great majority of eggs are laid in April. It breeds in the plains almost throughout India but only in suitable localities. It generally prefers dry country with patches of scrub or low jungle, or large groves or dry jheels, pretty thickly studded with grass turfts. Their favourite resort appears to be a lerge mango-orchard with a fairly thick undergrowth of rank vegetation. As a rule, no nest is made and there is no depression, the eggs being deposited on the bare ground. When there is no grass they are generally laid under shelter of a bush or hedge. Sometimes the nest is a mere hollow scooped out by the birds, very often in the midst of a layer of dead leaves, generally without any lining, but occasionally a with few blades of grass forming an incipient lining. If the nest is out in an open place, it is generally more or less concealed at the base of some bush of truft of grass ; but if the nest is in a grove, it is very generally not far from some large root of one of the mango-trees in the midst of dead leaves, and these so harmonise with the colours of the eggs that no further concealment is necessary. Sometimes the eggs are laid on the bare ground with a few pebbles arranged as a kind of border around the edge of the hollow.

Normally two eggs are laid, but occasionally three have been noticed in a clutch. The eggs are handsome, broad ovals, obtuse at both ends, with occasional occurrence of a more or less elongated and pointed variety. The ground colour varies from almost white to a deep buff with large, bold blotches and patches of brown and blackist brown with a few secondary and smaller markings of grey. In shape they are broad, blunt ovals. The eggs, as a rule, are glossless.

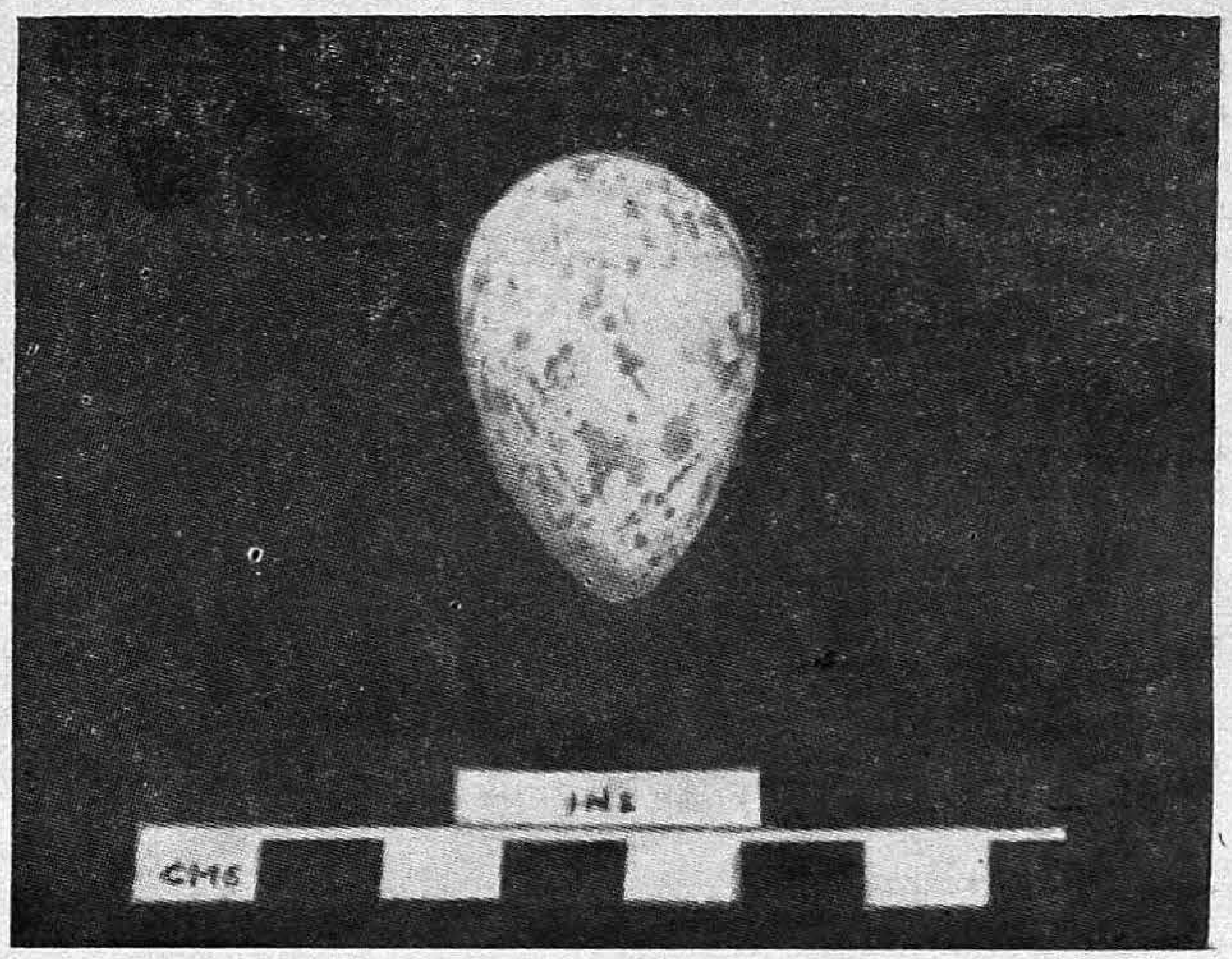

Figure 32. **Rostratula bengalensis bengalensis** (Linnaeus)
(The Painted Snipe)

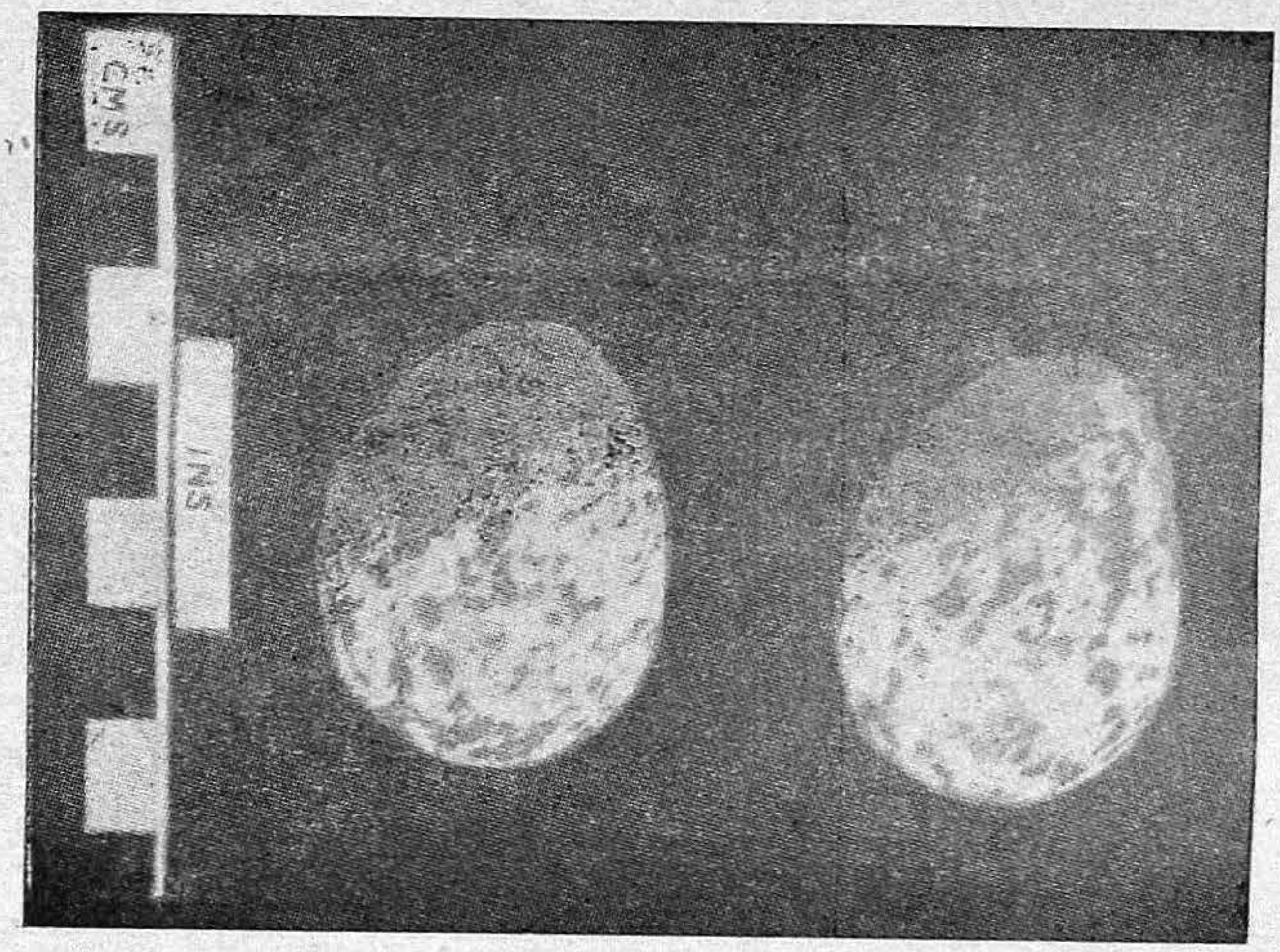

Figure 33. **Burhinus oedicnemus indicus** (Salvadori)
(The Indian Stone Plover or Curlew)

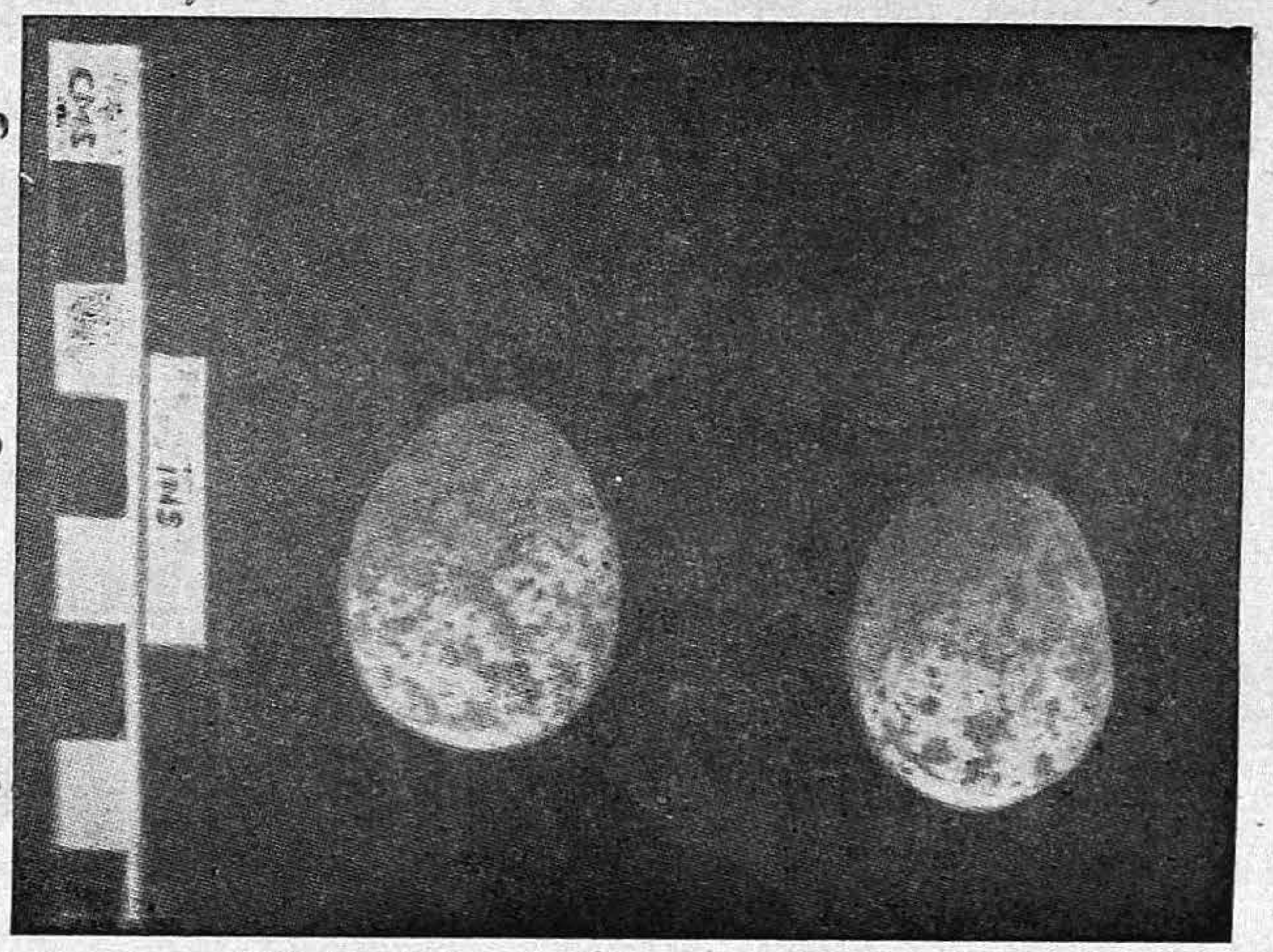

Figure 34. **Cursorius coromandelicus** (Gmelin)
(The Indian Courser)

The eggs vary in length from 41·9 mm to 54·6 mm. and from 33·0 mm. to 38·1 mm. in breadth ; but the average of about forty-seven eggs is 48·2 mm. nearly by 35·3 mm.

Specimens in the collection :

Two eggs : (i) Length : 49 mm.
Breadth : 34 mm
Colour : White with blackish and greyish blotches.
(ii) Length : 48 mm.
Breadth : 35 mm.
Colour : White with blackish and greyish brown blotches.

Famlily CURSORIIDAE.

Cursorius coromandelicus (Gmelin).

(The Indian Courser)

The Indian Courser is a common, Lawping-like cursorial bird occurring as a resident species but with a rather scattered distribution everywhere ; it also occurs partly as a nomadic or locally migratory species, in Pakistan, Baluchistan, Sind, Punjab and all over India (excepting Manipur and Assam) and in Bangla Desh and Nepal Terai. In Ceylon it occurs as a resident species in the low country (dry zone) chiefly around the Jaffna Pennisula.

The Indian Courser breeds commonly in dry, open, more or less bare and moderately watered tracts throughout Southern and Central India and Central parts of Northern India. The overall breeding season is from March to August. In Central India it breeds from April to June, in Western India from March to July and in Travancore principally in May and June. In Ceylon, it breeds mainly in May.

No nest is made, the eggs being laid in a shallow scrape on the bare ground either among pebbles and rubbish on the coast, as in Malabar or on arid fallow or waste lands and ploughed fields. Occasionally they may be found on rocky hill sides in thin scrub jungle, but never on sandy deserts.

The eggs are almost invariably two in number (very rarely three and in colour they match exactly the black soil and yellow debris on which they are laid. The eggs vary in colour from a pale yellowish stone colour to a rich yellow buff, thickly spotted and blotched with black. The markings, consist of blotches and smears or endless scrawls and scriggles of black covering most of the ground colour. In a few eggs the markings are more brownish than black. Sometimes the basic clouds and patches are very pale inky grey and over this there are lines, scratches and spots of black or blackish brown and a rich olive.

The eggs are broad, blunt ovals or almost spherical and have a smooth surface and perfectly glossless. There are minor variations in the markings. In some eggs the markings are denser or darker, in some they are comparatively well defined, and in others they are confused and cloudy.

These eggs closely resemble those of the Cream-coloured Courser (*Cursorius gallicus*).

The eggs vary in length from 29·0 mm. to 32·0 mm. and in breadth from 23·6 mm. to 25·9 mm. The average size of forty eggs is reported to be 30·7 mm × 24·0 mm.

Specimens in the collection :

Three eggs : (i) Length : 30 mm.
Breadth : 22 mm.
Colour : Yellowish, heavily blotched with black.
(ii) Length : 32 mm.
Breadth : 25 mm.
Colour : Cream-coloured, heavily marked with blackish patches and pale greyish secondary markings.
(iii) Length : 31 mm
Breadth : 23 mm
Colour : Creamy yellowish, heavily blotched with blackish patches and pale greyish secondary markings.

Family GLAREOLIDAE

Glareola lactea Temminck.

(The Small Indian Pratincole or Swallow Plover.)

This is a resident species found throughout India although sometimes it may be nomadic or occur as a local migrant. Its distribution ranges over Pakistan, all India (including Kashmir and Assam). Nepal, Bangala Desh and Ceylon (low country dry zone). It frequents large, placid streams with sandbars, and the Himalayas up to an altitude of 1,800 metres along the courses of the hills streams. It is also found in large jheels and coastal swamps.

In India, the overall breeding season is from February to April, and in Ceylon, March and April. Sometimes there is a second season in June, when the first clutches are washed away by rain or melting snow. This species breeds almost always on sand and shingle beds in large rivers, selecting the higher sand ridges for the purpose.

The eggs are often laid in the bare sand, with no cover of any kind, but occasionally they may be placed among thin grass. The nests are colonial, often several scores, close to one another. Actually no nest is made, and the so called nest is only a shallow scrape or hollow for the eggs in the sand. These are located on exposed sand banks in placid rivers, often near the water's edge. These nests frequently occur in company with those of terns and skimmers. The colonies consist of from about a dozen to nearly three or four hundred.

The normal clutch consists of two eggs, but occasionally there may be three or even four eggs. In Eastern India three is most usual and two exceptional, while in Assam the normal clutch consists of four eggs.

The eggs are very variable in colour. The ground clour is mostly pale sandy buff or sandy grey but it varies from a grey or greenish white to a sandy buff or sandy olive green and occasionally with a pink tinge. The markings consists of primary small spots and blotches of light grey-brown or reddish brown and secondary blotches of lavender or natural tint. These are scattered in large numbers all over, but generally rather denser at the larger end. Minor variations occur.

In shape, the eggs are typically broad ovals, very little compressed at the smaller end ; the shell is close, but somewhat chalky in its texture and entirely devoid of gloss. The eggs as well as the downy chicks are admirably camouflaged and merge perfectly into their sandy surroundings.

The eggs vary in length from 24·1 mm. to 30·0 mm. and in breadth from 19·8 mm. to 22·4 mm. The average size of two hundred eggs is reported to be 25·9 mm. × 20·5 mm. (Baker).

Specimens in the collection :

One egg : Length : 26 mm.
Breadth : 21 mm.
Colour : Brown, with fine black dots.

Family LARIDAE

Hydroprogne casipa caspia (Pallas);

(= **Sterna caspia** Pallas)

(The Caspian Tern.)

The Caspian Tern occurs over a wide range in Europe and Asia and also breeds in Africa and North America. In India it occurs as a winter visitor. It breeds locally in Pakistan and Ceylon, and in winter it occurs sparingly more or less throughout India and is locally common, greatly increasing in numbers by migrating individuals from Europe and other extra-limital regions. It occurs sparingly also in the Maldive Archipelagoes. This is the largest of our Terns and frequents the sea coasts, tidal mud flats, estuaries and backwaters.

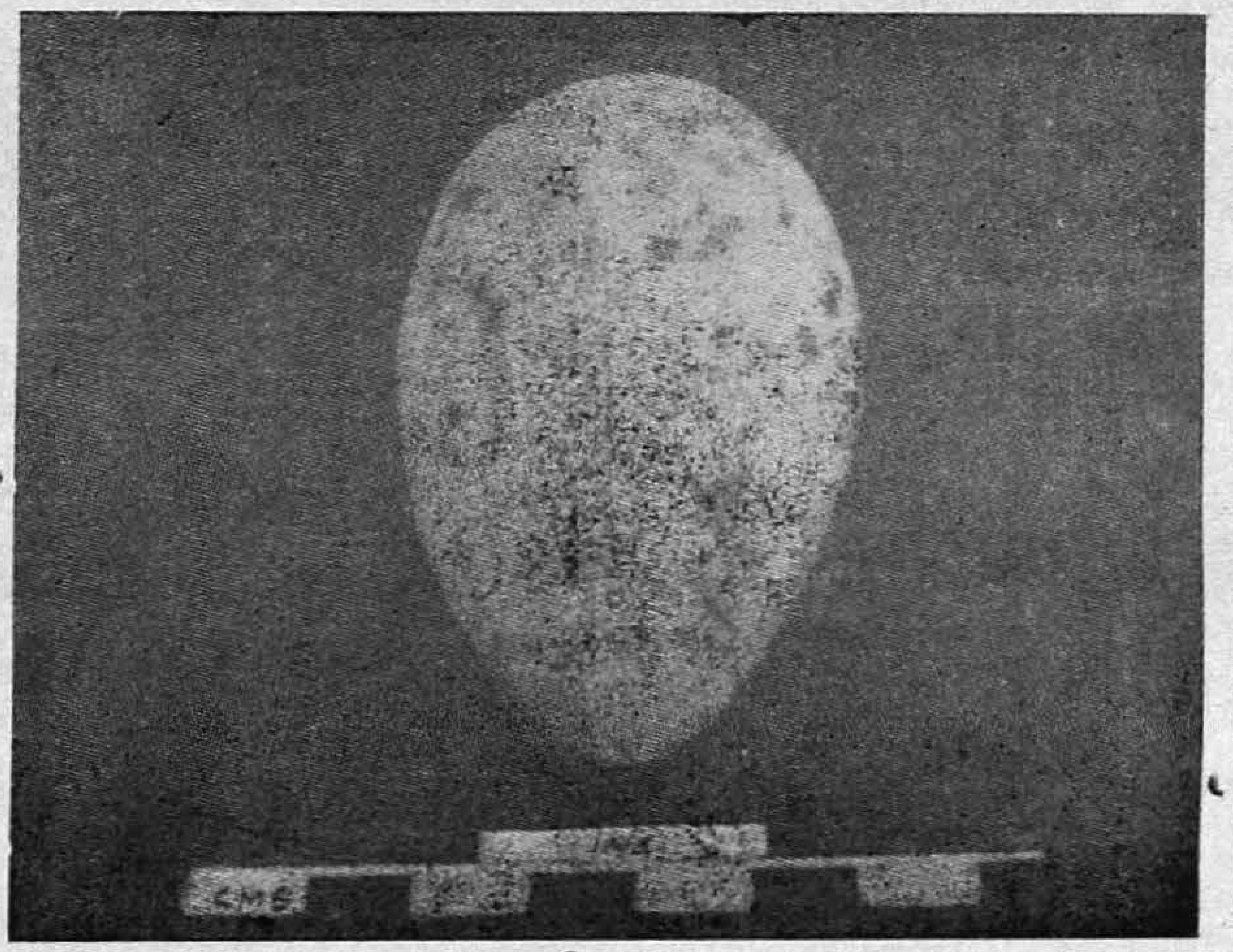

Figure 35. **Hydroprogne caspia caspia** (Pallas)
(The Caspian Tern)

These birds breed in different localities within Indian limits, as for instance, on the Astola Island off the Markan Coast (Pakistan) and on the sandbanks off the island of Manaar (Ceylon). They breed gregariously in colonies, along with theGull-billed terns and other species of terns, during May and June. The nest is reported (by Dillon Ripley and Salim Ali) to be a shallow scrape in the sand about half a metre or so away from its neighbours, but Baker records that on the Sonmeeni Bheel the nests were found to be fairly substantial structures composed of sticks, rushes and reeds built on the top of the scrubby bushes which grew everywhere on the marshes. No eggs were laid on the ground in this colony, but elsewhere, as in the Persian Gulf Islands. Baker records that they sometimes make nests on the sand and rocks.

The eggs of this species are, as a rule, comparatively broad to long ovals and but few of them show any sort of tendency to being pointed at the small end. The shell is compact and firm, but by no means fine-grained and is entirely devoid of gloss. The eggs vary in colour from a vary pale yellowish or greyish stone to a dull dark buff or warm buff and occasionally with a pinkish tinge, and are blotched with dark brown, reddish brown or purplish brown, with secondary blotches of grey. The ground colour of the great majority of eggs is greyish white, with the faintest possible creamy. buff-coloured or pinkish tinge ; but in a few eggs it is definitely brown or buff stone colour As usual in the Terns, the markings are of two types, namely, the primary ones, of varying shades of brown from almost black to a sort of olivaceous sepia, and the secondary ones which seem to lie beneath the surface of the shell and are pale lilac or pale greyish purple, or of grey and purplish neutral tint. The markings are, as a rule, small and rather thinly set.

The eggs vary in length from 58·4 mm. to 69·9 mm., and in breadth from 43·4 mm. to 48·0 mm. The average size of thirty eggs of this species taken within India is 64·8 mm x 46·0 mm., but the average size of European eggs of this species is slightly smaller, being 64·0 mm x 44·5 mm. (Baker).

Specimens in the collection :

One egg : Length : 67 mm.
Breadth : 43 mm.
Colour : White, with blackish brown blotches and markings.

Sterna aurantia J. E. Gray.

(= **Sterna seena** Sykes.)

(The Indian River Tern.)

The Indian River Tern is a resident species, found practically throughout India (including Kashmir) and Pakistan, Bangala Desh and Nepal, but is less common in Southern Peninsular India. It breeds on sandy islets on all the larger rivers of Northern India and Burma and less commonly in the South. It generally frequents the larger rivers, estuaries and tanks, but is rare on the sea coast.

These birds breed in large colonies numbering many hundreds of individuals, often on sand banks of large rivers in company with other Terns, Spur-winged Plovers (*Glareola lactea*) and the Stone Curlew. No nest is made, the eggs being laid in shallow scrape or depression in the sand. These depressions are always made on the bare sand on sand pits and is lets in large rivers (and not in shingle), often in company with Pratincoles, Skimmers and other species of Terns.

The eggs are normally three in number in a clutch, rarely four. Typically, they are broad ovals, slightly smaller at one end than at the other. The eggs have little or no gloss, though the shell is very smooth and fine.

The colouration and the markings are very variable. The ground colour varies from pale stone or buffy stone colour to greenish grey and the markings consist of spots. blotches and streaks of brown, reddish brown and inky purple. When fresh the eggs are tinged with pink and sometimes suffused with olivaceous. The markings vary much in shape, size

and character. Typically they are in the form of small blotches, lines and streaks, pretty thickly sprinkled over the surface of the egg, and at times resemble hieroglyphic markings ; but in some specimens the blotches are large and few in number, and occasionally they consist of long streaks. Beneath these primary markings, there are secondary marking underlying them. in the form of clouds and streaks of pale inky purple.

The eggs vary in length from 38·1 mm to 44·5 mm., and in breadth from 29·7 mm. to 33·5 mm . ; but the average of two hundred eggs is reported to be 42·0 mm . X 31·4 mm. (Baker).

Specimens in the collection :

One egg : Length : 44 mm.
Breadth : 30 mm.
Colour : Greyish white with blackish brown blotches.

Sterna albifrons albiforns Pallas.

(= Sterna minuta Blanford and Oates.)

(The Little Tern or Ternlet).

This species is widely distributed and occurs rather locally within Indian limits all over nothern India, eastwards to Assam and Peninsular India south to Kerala and Rameswaram Island, extending also to Ceylon, Laccadive and Maldive Islands. It breeds in Europe and Western Asia and wanders south in winter as a winter visitor to Somaliland, the Makran Coast, Sind and North West India. These birds frequent tidal creks, coastal lagoons and salt-pans but are mainly found around rivers and freshwater jheels inland.

They breed in small colonies on sandbanks in rivers or sandy islets in jheels, making no nest. The eggs are laid on the bare sand or shingle or among pebbles in a shallow depression. The breeding season lasts from the end of May to about the middle of June.

The eggs are two or three in number and vary in ground colour from white to sandy buff, variously tinged with yellowish, greyish or greenish and blotched, spotted or speckled with some shade of dark brown or reddish brown and with secondary markings of lavender. In shape, the eggs are typically broad, obtuse ovals

The average size of the eggs is about 32 mm. 24 mm.

Specimens in the collection :

One egg : Length : 30 mm
Breadth : 24 mm.
Colour : Pale greyish brown, with blackish brown and greyish brown spots.

Sterna dougalli korustes (Hume).

(=Sternula korustes Hume).

(The Roseate or Easten Rosy Tern).

The Roseate or the Eastern Rosy Tern breeds in large mixed colonies in the Andamans and Ceylon and in the islets off the south eastern and west coasts of India (Ramaeswaram Island), Ceylon and also the Maladives. The colonies are of considerable size, consisting of over 200 pairs. In the Andamans it breeds during June and in Ceylon in April and early May. The nests are usually in the form of a mere scrape in the sand with little or no lining, but sometimes they are scantily lined with debris and small shells and pebbles; some nests, however, are in the form of well made pads of grass. In the Andmans this Tern and the Black-naped Tern (*Sterna sumatrana*) breed

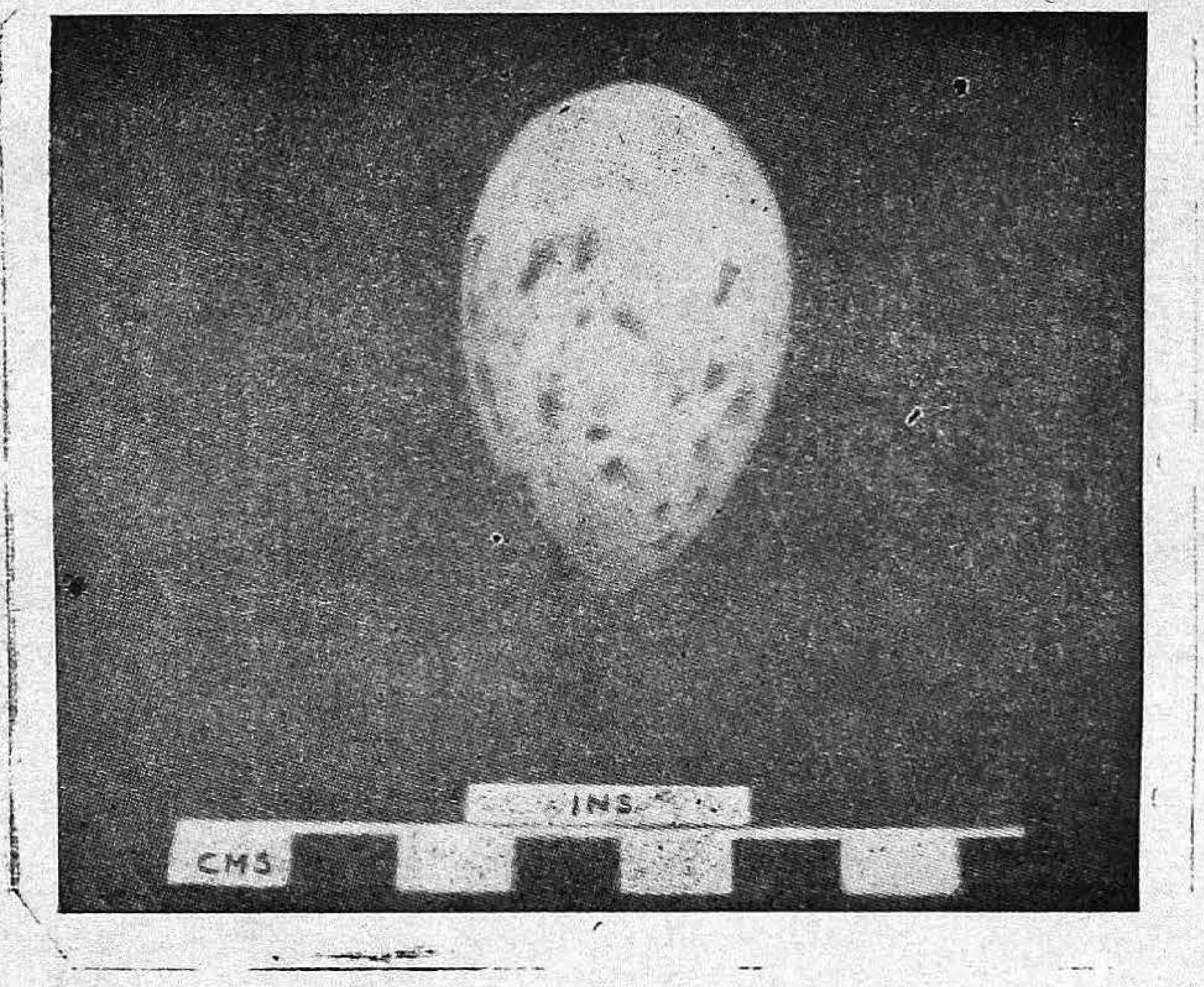

Figure 36. **Sterna aurantia** J. E. Gray
(The Indian River Tern)

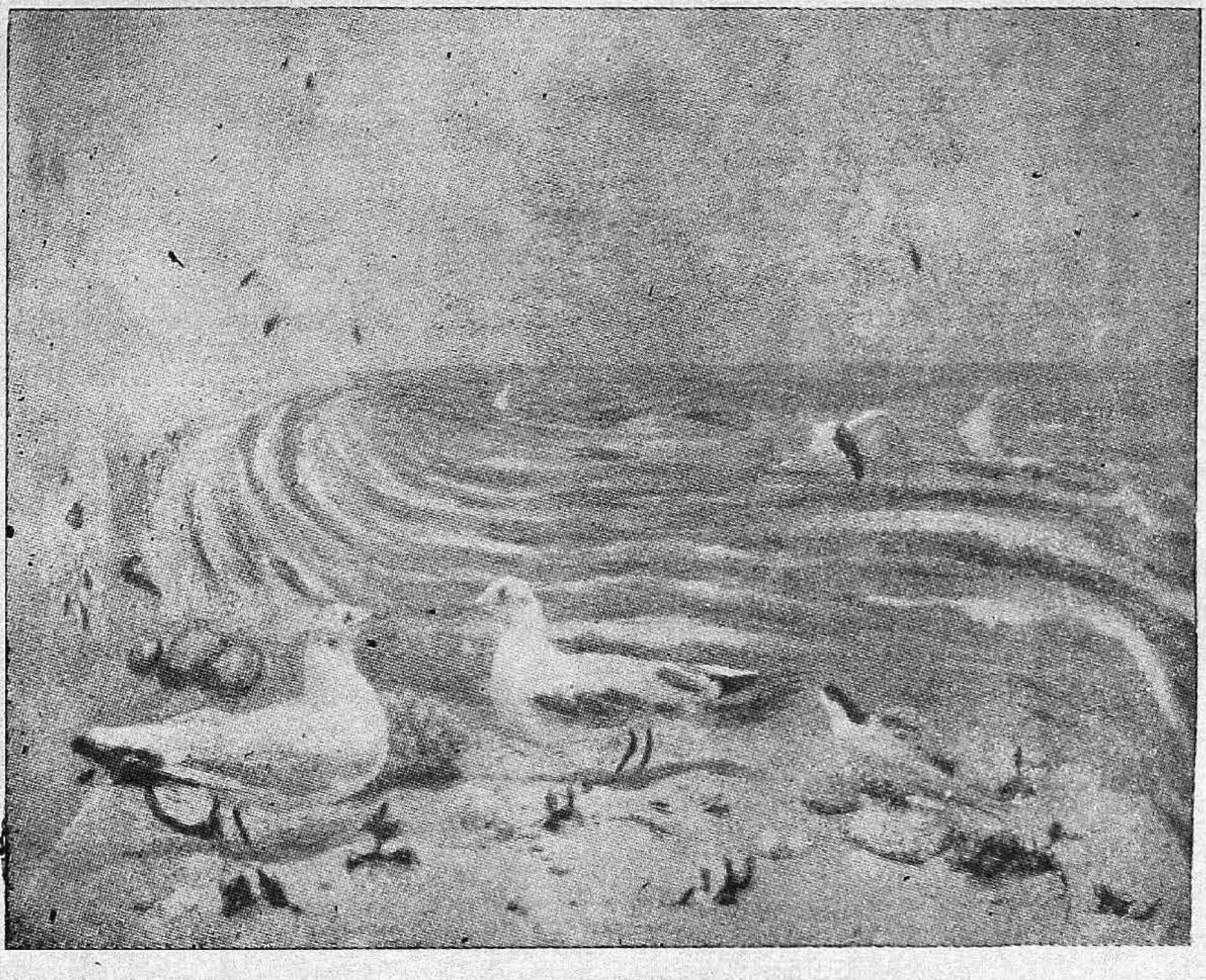

Figure 37. Diorama of Gulls and Terns showing eggs of the Roseate Tern in the foreground.

together, while in Ceylon and surrounding islands it breeds with the Cevlon large crested Tern (*Thalasseus bergi edwardsi*). In the colonies, the nests are generally found from a foot to six feet or a little more apart and often they extend in a broad semicircle, along the highest ridge of sand on the sea coast. At high tide some of the nests are naturally surrounded by water. These nests are usually small hollows scratched in the sand, from 4 to 6 inches wide and from 1/2 to 1-1/2 inches deep; some contain a partial lining of shells. The sand taken out of the cavity is usually deposited in a small mound around the nest

The eggs usually number one or two, very rarely three. They are similar to those of the Tibetan Tern, but somewhat smaller. Their typical shape is a regular oval, occasionally slightly pointed, but many elongated and stumpy eggs are also met with. The colouration is very variable. They are most commonly pale yellowish or greyish stone with numerous feckles and some large blotches of dark brown, reddish brown, purplish black or black, and secondary marketings of grey or lavender. The eggs are somewhat similar to those of the European Rosy Tern, and are smaller, more speckled and less heavily blotched as a rule than the eggs of the Common Tern. In shape also they are typically longer and more pointed.

Every intermediate gradation is found between a warm umber or sepia ground and very pale grey stone colour, in the latter case with a faint permanent greenish tinge. The eggs are spotted and boldly blotched and clouded with dark umber brown or warm sepia, in some instances so dark as to be almost black,the deep tone often overlying a lighter one. All have secondary inferior clouds and spots of light brownish purple or faint inky grey. In a large number of eggs, the markings are chiefly clustered in a zone round the obtuse end. Some eggs have no blotches and spots are spread almost uniformly over their whole surface.

The eggs vary in length from 37·6 mm to 44·2 mm. and in breadth from 26·7 mm. to 30·5 mm. ; the average size of one hundred eggs measured is reported to be 40·2 mm. × 29·3 mm. (Baker).

Specimens in the collection :

Two eggs (in the diorama of Gulls and Terns):

(i) Length : 42 mm.
Breadth: 30 mm.
Colour : Whilte with brown spots.

(ii) Length: 42 mm.
Breadth: 29 mm.
Colour: White with brownish spots.

ORDER COLUMBIFORMES

Family PTEROCLIDAE

Pterocles exustes erlangeri Temminck.

(The Common Sandgrouse).

The Common Sandgrouse breeds throughout the drier and barer portions of the more or less sandy plains of India. It generally frequents scattered fallow or stubble, or newly ploughed fields, dotted about on, and surrounded by, large semi desert plains. Eggs are found practically in almost every month, but the majority probably lay from April to June.

The eggs are laid in the bare ground, usually in a hollow or shallow basin scratched out by the birds, some five inches in diameter and two inches in depth. The hollow is scratched amidst loose stones.

The eggs are, as a rule, found laid on the bare ground in a slight depression and no nest of any kind is made. But not infrequently, the eggs are more or less sheltered by low bushes, roots, or tufts of grass and large clods, and occasionally the nests have a lining of loose pieces of grass.

As a rule, there is no attempt at anything like a nest, the eggs being deposited in slight depression on the bare ground scraped out by the birds most frequently in an extensive plain.

These birds normally lay three eggs, but at times they lay only a pair of eggs, and very rarely even five eggs have been found in one nest.

The eggs are of a very peculiar shape, long and cylindrical like those of a Nightjar. The texture is fine and smooth, and they have generally a fine gloss. Many of them strongly resemble those of some species of Nightjar not only in shape, but also in markings. The ground colour varies much; in some it is of a pale, somewhat pinkish stone colour, in others, greyish or dingy greenish white; in still others it is a somewhat light olive brown. Typically they are thickly spotted, streaked or irregularly blotched, pretty uniformly over the whole surface, with two sets of markings—the one of darker or lighter shades of olive brown, the other a sort of a pale inky purple, and these latter, which are most commonly streaks and clouds, seem to underlie the others. Different eggs vary much in the distribution, size and intesnsity of these markings, as also in the relative proportion of the extent of surface covered respectively with the primary and secondary markings. In some, almost the whole ground colour not occupied by the primary markings is clouded with pale inky purple; in others only here and there a few spots of this colour are traceable; in some, all the markings are small, very thickly set and freckly; in others they are bold, large, eccentrically shaped blotches, comparatively thinly distributed over the surface. Some of the eggs are, as a whole, very much darker coloured than others and in some the ground colour might perhaps be best described as a fairly greenish grey. As a rule, the paler the ground the paler the markings and *vice versa*. Exceptionally, beautifully marbled eggs are met with, as also unmottled, pale creamy varieties.

The eggs vary in length from 33·5 mm. to 40·6 mm. and in breadth from 24·1 mm. to 28·2 mm.; but the average appears to be 36·8 mm. by 26·1 mm.

Specimens in the collection;

One egg: Length 34 mm.

Breadth: 26 mm.

Colour: Yellowish white with greyish and brownish markings.

Pterocles indicus indicus (Gemelin).

(= **Tetrao indicus** J.F. Gmelin).

(=**Pterocies fasciatus** Blanford and Oates).

(The Painted Sandgrouse).

The Painted Sandgrouse is found as a resident species over the greater part of Pakistan and Peninsular India from Rajasthan and Gujarat east to Bihar and Orissa and south to Mysore and Tamil Nadu. It is rare or absent in the Gangetic Plain and in the deltaic region of West Bengal and in Assam, Bangala Desh and Ceylon. It is also absent on the South West Coast of India from Bombay southwards. It is locally nomadic. and frequents bare, stony, or scatnily scrubbed foothills and plataeux; it avoids coastal tracts.

The breeding season is not well defined; it breeds practically all the months of the year; however, the period between March and early June appears to be the favourite season. Eggs have been taken practically during every month of the year except during the heavy rains in July, August and September.

The eggs are usally three in number, rarely two. They are laid in a shallow scratching or scrape made by the birds in ravines, broken or stony ground or in stony hills under protection of a small bush or grass clump. In Madhya Pradesh it often breeds in easual forest.

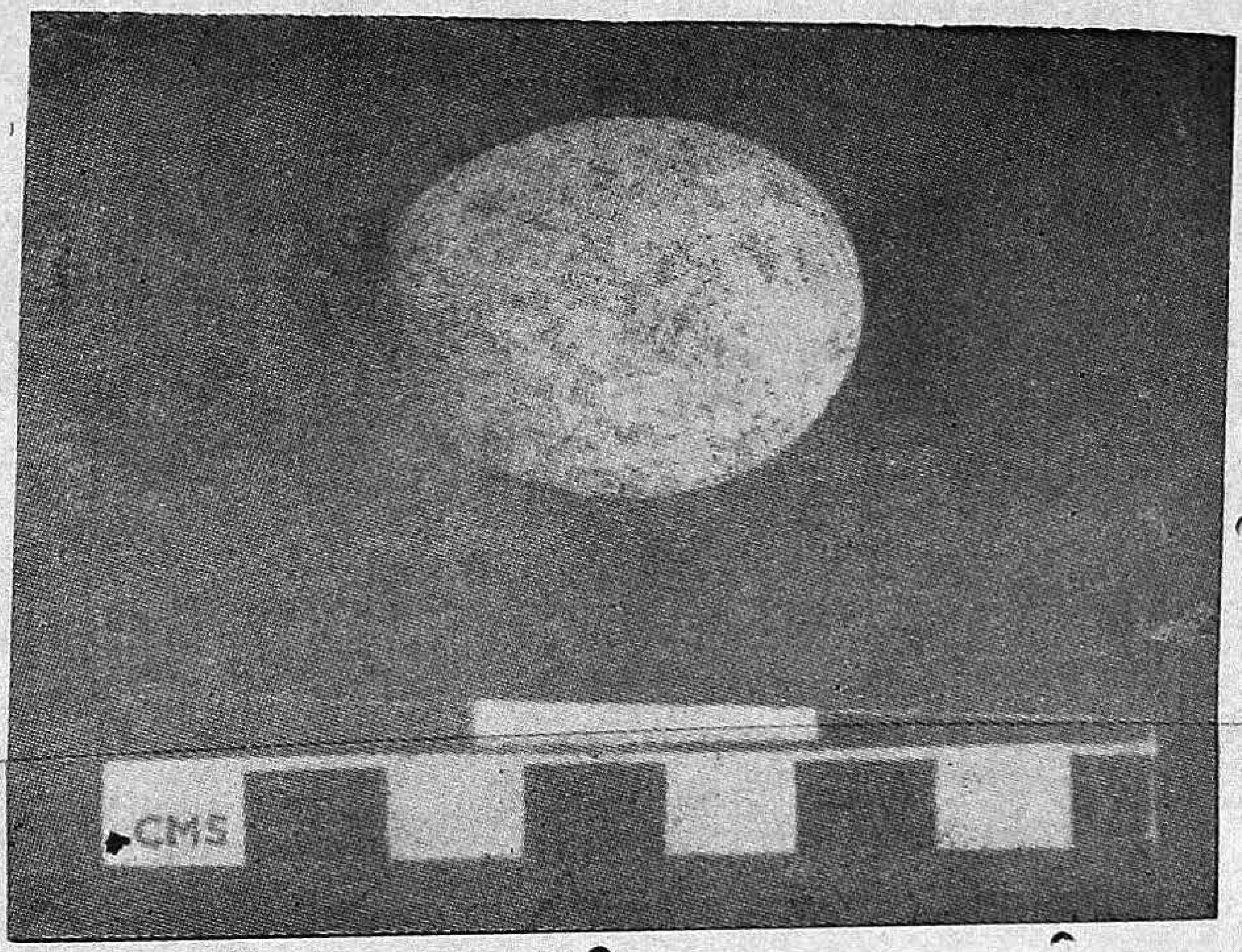

Figure 38. **Pterocles exustes erlangeri** Temminck
(The Common Indian Sandgrouse)

The eggs of this species are the most beautiful of all Sandgrouse eggs They are ellipse-shaped and the ground colour varies from a pale cream to a warm salmon-buff; markings consist of primary blotches and specks of some shade of brownish red or light or dark purple red with secondary blotches of inky grey, reddish grey or lavender.

The eggs vary greatly in size. The average size of eighty-eight eggs is reported to be 35·8 mm. × 25·0 mm. (Baker).

Specimens in the collection:

One eggs: Length : 39 mm.
Breadth: 25 mm.
Colour: Dingy white, mottled with brown.

Family COLUMBIDAE.

Subfamily TRERONINAE.

Crocopus phoenicopterus phoenicopterus (Latham).

(=**Treron phoenicoptera peoenicoptera** (Latham.)

(The Bengal Green Pigeon).

The Bengal Green Pigeon though found as a straggler in the eastern portions of the Punjab and Rajasthan, and somewhat more commonly almost throughout the Central and North western Provinces and Oudh, occurs most abundantly only in Bengal and in the strip of Bengal-like country that runs up under the Himalayas westward to Jumna.

This species breeds from March to June.

The nests are light structures composed of twigs laid upon two or three thin branchlets, forming a horizontal fork, devoid of lining and about six inches in diamater and one inch in thickness, with a shallow central depression barely half inch in depth. The nests are generally placed near the outside of large mango trees, at heights of from twenty to thirty feet from the ground, and in the vicinity of water. The nest is usually small and crude and is apparently very carelessly constructed of a few dead twigs placed haphazardly at the end of a branch, but is extremely well concealed, as the bough selected always appears to be a bare one, on which the dry twigs do not attract attention.

It lays two white eggs of a rather broad, oval shape. The eggs are of the usual pigeon type, white and glossy, and, as a rule, broad, nearly perfect ovals, but occasionally in this and other species of green pigeons a good deal pointed at one end.

The eggs vary in length from 29·5mm. to 34·3 mm., and in breadth from 22·9 mm. to 25·4 mm.; but the average of eighteen eggs is 31·2 mm. by 24·1 mm.

Specimens in the collection:—

Two eggs : (i) Length : 33 mm.
Breadth : 27 mm.
Colour : White.

(ii) Length : 31 mm.
Breadth : 24 mm.
Colour : White.

Treron phoenicoptera chlorigaster (Blyth).

(=**Crocopus chlorigaster** (Blyth)).

(The Southern Green Pigeon.)

The Southern Green Pigeon occurs throughout Peninsular India as a resident species, wandering locally, depending on the availability of ripening fruit. It is found all over Peninsular India, including southern Rajasthan and Gujarat, roughly south of the Gangetic Plain (south of the range of the Bengal Green Pigeon) but the exact boundary between the two races is ill defined. In Ceylon it occurs as a rare vagrant. It usually frequents dry and moist deciduous forest containing *Ficus* and other fruiting trees, and also groves of fruit trees in the open country side and around villages and cultivation. These pigeons are almost exclusively arboreal, only descending to the ground occasionally to drink or to pick earth at salt pans.

The breeding season extends from March to June normally, but occasionally it may extend to a month or two earlier or later; the season lasts mainly during March and April.

The nest is similar to that of the other species of the family. It consists of a flimsy platform of the interlaced twigs, placed in a moderate-sized tree and concealed among the foliage. The nest is generally placed in trees on the outskirts of forests or near villages and in gardens, often in the same trees as those which hold the Black Drongo's nest; the pigeons are thus able to enjoy the protection afforded by the Black Drongos from nest robbers such as crows and tree pies.

The eggs are typically moderately broad and perfectly oval or elliptical and not infrequently a great deal pointed towards one end. They are white and more or less highly glossy.

Like the eggs of most species of pigeons and doves, they vary a great deal in size. In length they vary from 28·4 mm. to 34·3 mm., and in breadth from 22·9 mm. to 25·4 mm. The average size of forty eggs is reported to be 31·8 mm. x 24·6 mm. (Baker).

Specimens in the collection.—

One egg : Length : 39 mm.
Breadth : 27 mm.
Colour : Creamy white.

Columba livia intermedia Strickland.

(=**Columba intermedia** Strickland).

(The Indian Blue Rock Pigeon).

The Indian Blue Rock Pigeon is a resident species found abundantly in certain localities throughout the Indian Union, Nepal, Bhutan, East Pakistan, Ceylon and the Laccadive Islands. It is found both in the plains and the hills up to at least about 3,000 metres in the Himalayas, where it is a seasonal migrant. It was introduced into Car Nicobar Island in 1898, but has not become established there.

This species usually frequents rocky cliffs and gorges in the hills, ruins of old buildings, ancient forts on the country side, mosques, factory and warehouse sheds, residential and public buildings, railway stations and market places in crowded cities.

The breeding season is not well defined and extends practically throughout the year. In the higher ranges of the Himalayas, it is mainly between May and July, and elsewhere it varies locally. In regions of heavy rainfall, the breeding activity is not so pronounced during the period from July to September. Most eggs seem to be laid from February to April. In some parts of India they breed in large colonies.

The nest consists of a skimpy pad of sticks, straw and all sorts of rubbish, feathers, etc., often verminous, and befouled and matted with the birds' own droppings. The nest is usually placed on sheltered ledges and in holes and fissures in rock scarps and ruined ramparts of old hill forts or in the roofs of old ruined dwellings. The nests often occur in large colonies, the nests being sometimes huddled close together. In urban situations the nests may be found in holes and niches in the sides of masonry wells, rafters in factories and godowns, cornices in dwelling houses and mosques and similar places. Holes in trunks of palm trees and other large trees are also frequently used for placing the nest.

Two white, smooth-textured eggs are laid. The eggs vary a great deal in size and also much in shape, from broad, very perfect ovals, or elliptical ones, only slightly compressed at one end to moderately elongated and occasionally rather pointed forms. They are highly glossy.

The eggs vary in length from 30·5 mm. to 41·9 mm., and in breadth from 25·9 mm. to 31·8 mm. The average size of one hundred eggs is reported to be 36·9 mm. x 27·8 mm. (Baker).

Specimens in the collection :

One egg : Length : 37 mm.

Breadth : 28 mm.

Colour : White.

Streptopelia chinensis suratensis (Gmelin).

[=**Turtur suratensis** (Gmelin).]

(The Indian Spotted Dove).

The Indian Spotted Dove occurs throughout the whole of India and in the Himalayas up to 7,000 feet, as a resident species. It is common in suitable localities in Pakistan and all over India and eastwards to Cachar in Assam and Nepal, Sikkim and Bhutan. Southwards its distribution extends through the Peninsula to Kanyakumari. It occurs also in the hills of Peninsular India up to an altitude of about 1,500 metres. It frequents better wooded and better watered regions than the Ring Dove and the Little Brown Dove and is common in gardens, groves, cultivated areas and moist deciduous jungle.

This species breeds practically throughout the year in the more humid and better wooded portions of India more or less throughout its range except in the northern portions with a definite cold season where it breeds mainly from April to July. In the hills it breeds up to elevations of 5,000 to 6,000 feet. There appears to be two broods or possibly more, in a year. In the plains of Bengal, for instance, the breeding occurs in two seasons namely March to June and again during September and October. In Southern India most birds of this species lay from October to April and in the higher hills from February up to September. In the Himalayas it breeds mostly from April to July.

The nest consists of the usual flimsy platform composed of a few twigs and grass-stems with a central depression. The nest is placed usually fairly low down in a tree, thorn bush or bamboo clump or in the head of a stunted date palm; the nest is also commonly built under eaves and on the cornices and rafters of verandahs of inhabited buildings and in stables, outhouses and all sorts of unexpected places. When the nest is built in trees or bushes, those in thin forest, scrub jungle, gardens or bare cultivated land are preferred to those in deep forest. Generally the nest is placed low down on trees or bushes or in buildings, but occasionally it may also be built high up in a mango or other large tree.

The eggs are normally two in number, but occasionally three; they are typically broad ovals, but elongated and pointed varieties also occur. The eggs have a smooth texture and are pure white and glossy.

The eggs vary greatly in size. In length, they vary from 24·1 mm. to 29·7 mm., and in breadth from 19·1 mm. to 24·1 mm. The average size of one hundred eggs is reported to be 27·2 mm. x 21·8 mm. (Baker).

Specimens in the collection :

One egg : Length : 27 mm.

Breadth : 22 mm.

Colour : White.

Streptopelia senegalensis cambayensis (Gmelin).

[=**Columba cambayensis Gmelin**)].

[=**Turtur senegalensis (Linnaeus)**].

[=**Turtur cambayensis (Gmelin)**].

(The Indian Little Brown Dove).

The Indian Little Brown Dove occurs mainly as a resident species throughout India Pakistan and Bangala Desh. Eastwards its range extends up to Bihar, West Bengal and Bangla Desh and southwards through the Peninsula up to Rameswaram Island and Kanyakumari. It does not occur in Nepal, Sikkim, Bhutan, Assam or Ceylon, but is recorded from Port Blair in the Andaman Islands where it is possibly introduced. This species frequents the vicinity of villages and stony scrubland and bush country near cultivation, particularly in regions which are interspersed with *Euphorbia* hedges and cacti. It is found up to an altitude of about 1,000 metres in the Western Himalayas and about 1,500 metres in the Peninsular hills.

The breeding season is not well defined; it breeds practically throughout the year but chiefly from January to October ; two or more broods are raised. In the plains most eggs are laid during the months February to April or September to November, while in the hills it breeds continuously from April to October.

The nest is a very flimsy structure in the form of a crude platform composed of twigs and grass stems and sometimes a few roots also, but without any lining. The nest is commonly placed low down in a *Euphorbia* or other open bush, or a stunted date palm (*Phoenix sylvestris*). The nests are also frequently built on cornices or rafters or in niches of buildings or verandahs of houses or on walls and under eaves in inhabited bungalows, quite unmindful of the proximity of human beings. The site selected is anywhere except in forest, but the birds prefer the vicinity of villages and human habitations.

The eggs are invariably two in number, white, rather longish and elliptical, and are highly glossy, with a smooth texture. The eggs vary comparatively little in shape and are typically rather broad, perfect ovals, but they vary a good deal in size.

The eggs vary in length from 22·4 mm. to 30·0 mm., and in breadth from 19·1 mm. to 22·9 mm.; the average size of sixty eggs is reported to be 25·3 mm. × 19·3 mm. (Baker).

Specimens in the collection :

One egg : Length : 27 mm.

Breadth : 20 mm.

Colour : White.

Streptopelia decaocto decaocto (Frivaldszky).

(=Columba risoria Linnaeus).

(=Turtur risorius (Linnaeus.).

(=Columba risoria Linn. var. decaocto Frivaldkszly.)

(The Indian Ring Dove.)

The Indian Ring Dove occurs as a resident species throughout India and Ceylon except in the very wet regions such as the Malabar Coast and North Eastern Himalayas. It exhibits marked seasonal migrations, depending on local conditions and is found in suitable localities all over India, Pakistan, Bangla Desh and Ceylon. It is not recorded in Sikkim Bhutan, Andaman, Nicobar and the Laccadive and Maldive Islands. In the Western Himalayas it cocurs up to about 2,400 metres in summer. It frequents open, cultivated, mostly dry deciduous country (even semi-desert country) with groves of *Acacia* (babool) and other similar trees.

The Indian Ring Dove breeds throughout its range, in the plains of India and up to an altitude of about 2,400 metres in Kashmir and Western Himalayas.

In the northern regions, where there is a definite cold winter, the breeding season extends from May to September, chiefly May and June. In other areas and in Peninsular India, they practically breed throughout the year and in Ceylon from December to May, cheifly during April and May.

These doves do not frequent the vicinity of human habitations like the Spotted and Brown Doves, and although a few nests may be found in gardens and round villages, most nests are built in large trees, in well wooded country away from towns and villages and some even in thin forest.

The nest is a flimsy pad-like structure composed of twigs and usually placed low down in the outer branches of a *Euphorbia* bush or some small tree such as the babool tree (*Acacia*) and occasionally on rafters in stables, cattle sheds or out houses.

The eggs are normally two in number and occasionally three. They are usually broad and perfect ovals, pure white, glossy and smooth-textured. The eggs vary a good deal in size. Although many of the eggs may be described as pure white, yet, when contrasted with the eggs of the Blue or Green Pigeons, the vast majority of them are seen to have a perceptible ivory tinge.

The eggs vary in length from 26·7 mm. to 31·8 mm., and in breadth from 21·6 mm. to 25·4 mm. The average size of sixty eggs is reported to be 30·1 mm. × 23·2 mm. (Baker).

Specimens in the collection :—

Three eggs : (i) Length : 30 mm.
Breadth : 23 mm.
Colour : White.

(ii) Length : 30 mm.
Breadth : 23 mm.
Colour : White.

(iii) Length : 26 mm.
Breadth : 20 mm.
Colour : White.

ORDER PSITTACIFORMES.

Family PSITTACIDAE.

Psittacula cyanocephala cyanocephala (Linnaeus)

(The Western Blossom-headed Paroquet.)

In Ceylon, this little Paroquet breeds from February to May, and in Southern India chiefly from February to early April. In the lower Himalayas they breed in April and May and finally in Bihar from February up to early May.

This Paroquet generally excavates for itself a nest-hole selecting a rotten branch for this purpose. Often several birds breed close together and sometimes in regular colonies. The eggs usually number four or five, and rarely six eggs are found in a single nest hole. The hole is usually a foot deep, very roomy, but the entrance which is generally enlarged by the bird, is only large enough to admit the body of the bird. The eggs are usually laid on the bare wood inside the nest hole.

The eggs are pure white, rather glossy when fresh, but becoming dull with incubation. The eggs measure from 24·6 mm. to 24·1 mm. in length and from 21·6 mm. to 20·3 mm. in breadth. The average size of fifty eggs is 24·9 mm. × 20·2 mm.

Specimens in the collection :—

One egg :	Length :	25 mm.
	Breadth :	21 mm.
	Colour :	White.

ORDER CUCULIFORMES

Family CUCULIDAE

Clamator jacobinus jacobinus (Bodd.).

(=**Coccystes jacobinus** Blanford and Oates.)

(The Pied Crested Cuckoo.)

The Indian Pied Crested Cuckoo lays in the plains of India and the lower ranges of the Himalayas, from the latter half of June to the end of August, but in the Nilgiris in South India, the various Babblers, in whose nests this species deposits its eggs,breed in January February and March, and there this species of Cuckoo also seems to lay in those same months.

This is one of the few species of Cuckoos in which the evolution of the egg and nesting behaviour are perfect or complete. Many oviduct eggs have been taken and these, like the eggs formed with the foster-parents, have all been of one type. The Pied Crested Cuckoo practically invariably deposits her eggs in the nests of Babblers of the genera *Turdoides* (*Crateropus*) and *Argya*. Both these genera lay deep blue eggs, which, in shape are blunt, broad ovals, often almost eiliptical. This Cuckoo lays eggs that are always either eiliptical or spheroidal in shape, and in size and colour much the same as eggs of the Babbler, *Turdoides terricolor*.

In the Nilgiris, it appears to lay its eggs exclusively in the nests of the large Grey Babbler, *Argya malcolmi* and of the Common Laughing Thrush (*Turdoides cachinnans*).

The young Cuckoos often oust their nest-fellows which are the legitimate occupants of the nest.

The egg is, as a rule, a very perfect oval, blunt at both ends ; in colour it is a deep greenish blue or greenish olive, inconspicuously marked with small dark greenish blotches or stains at one end. The number of Babbler's eggs in the nests varies from two to four. The texture of the shell of the Cuckoo's egg is close and hard ; the shell is very thick and the surface exceedingly fine and smooth, though seldom glossy like the fosterer's (i.e., the Babbler's eggs. Further, the Cuckoo's eggs often get stained when any damp material falls on them, making marks dark blue in colour, which at once differentiate them from any Passerine eggs. Often two, three or even four female Cuckoos lay thier eggs in the same Babbler's nests and so close are the eggs in appearance to those of the fosterers that often many Cuckoo's eggs are found in one nest, but they show by their size and shape that they belong to two, three, or even four females. But only one young Cuckoo, the strongest or the first hatched of the lot, survives, the rest being ousted one by one, together with the young Babblers, until it remains as the sole occupant of the nest.

The eggs of this species of Cuckoo are well adapted (in colour, shape and size) for being deposited in the nests of the various species of Babblers [*Argya* and *Turdoides* (=*Crateropus*)] which are usually chosen as the foster-parents for its young ones. In colour, they are a spotless blue, darker or lighter in different specimens ; but they are all highly glossy and closely resemble the eggs of *Argya caudata* which is also one of the species of Babblers chosen in whose nests this Cuckoo lays its eggs.

The eggs vary in length from 22·9 mm. to 24·9 mm., and in breadth from 18·3 mm. to 21·8 mm. But the average size of a series of one hundred eggs measured is reported to be 23·9 mm × 18 ·6 mm. However, they vary greatly in size.

Specimens in the collection :

One egg : Length : 24 mm.
Breadth : 21 mm.
Colour : Pale bluish green.

Eudynamus scolopaceus scolopaceus (Linnaeus).

[(=**Eudynamus honorata** (Blanford & Oates)].

(The Indian Koel).

The Indian Koel is parasitic on the Corvidae, with regard to its nesting habits. It deposits its eggs most commonly in the nests of the House Crow (*Corvus splendens*), adjusting its own breeding period to that of the crows. In many cases they have two periods. For instance, in Dacca, they have two distinct breeding times ; in December and January, they lay in the nests of *Corvus coronoides* ; in March and April no eggs are found, but towards the end of May, when the House crow starts building, the Koel also recommences pairing and lays in the House Crow's nests (*Corvus splendens*) in June. Some observers have held that Koel's eggs are found alone in Crow's nests so that there can be little doubt that the Koel destroys the eggs of the Crow at the time her own eggs are deposited. But this is refuted by other observers. The Koel's eggs are not found alone, but along with the Crow's eggs in many nests. It is not the eggs that are destroyed, but the young ones of the Crow that are got rid of probably by the young Cuckoos.

The Koel normally lays one, two or three eggs but sometimes several eggs or young ones of the Koel have been found in Crow's nests. The Koel sometimes, if not always, lays its eggs directly into the Crow's nest and it takes only one or two seconds to do this. The young of the Koel are fed by the crows which act as foster parents. Generally only one young of the Koel is seen in one nest, but many observers have recorded having seen several young ones of Crows and young ones of Koel together in the same nest. As many as thirteen Koel's eggs have been found in one nest, and the female Koels seem to have no definite breeding area.

The Koel's eggs are very much like those of the Crows, but are slightly smaller than those of the Crows, and resemble miniature eggs of the foster parent. The ground colour is pale stone, pale greenish yellow, or yellowish grey, and they are profusely and thickly marked all over with various blotches, freckles, specks and spots of reddish brown ; in

most cases, however, having the prevailing tone green. The colour often matches that of the Crow's eggs among which they are laid, and seems to vary to some extent geographically with the prevailing character of the hosts' eggs, being paler and more reddish when the Crow's' eggs are coloured thus, and darker and more greenish when the Crows' eggs are of this type. The markings are somewhat confluent at the obtuse end. The texture of the egg shells is very compact and fine, but they are entirely devoid of gloss. The markings are almost invariably most numerous towards the large end, where they often form an irregular, imperfect zone, or sometimes a mottled cap ; but while in some eggs the markings are almost exclusively confined to the broader half where they are but thinly sprinkled, in others they almost hide the ground colour throughtout and are nearly confluent over the whole upper end. In colour, the markings are olive brown, reddish brown and dull purple, the reddish brown and purplish markings predominating on stone colour and dingy grounds, and the olive brown markings where the ground colours are brighter green. They vary little in size or shape and are moderately broad oval, somewhat compressed towards the small end.

The eggs vary in length from 27·4 to 35·8 mm. and in breadth from 22·6 mm. to 24·4 mm. The average size of a large series of one hundred eggs is 31·0 mm. 23·6 mm.

Specimens in the collection :

One egg : Length 31 : mm.
Breadth 24 :mm.
Colour : Creamy, with brownish and greyish spots.

Centropus sinensis sinensis (Stephen).

[=(**Centrococcyx rufipennis** (Ill.)]

(The Southern Crow Pheasant or Coucal).

The Common Crow Pheasant or Coucal breeds over the whole of its range during the monsoon. The Southern race, *Centropus sinensis parroti* breeds in Ceylon from March to September. In South India it breeds till about the end of August.

These birds build, most commonly, a huge, globular, domed nest at varying heights from the ground, in the centre of thick, thorny bushes or trees. The nest is principally composed of dry twigs, mixed with roots, grass, etc., and lined with a few green leaves, but all kinds of odds and ends are at times incorporated into the structure. Occasionally quite different materials are made use of, the nest consisting almost wholly of leaves, rushes or coarse grass. The nests are hollow, oblate spheroids, about 18 inches in external diameter, and six to eight inches in height, with a large hole on one side, the distance from the entrance of which to the back of the nest inside may be 12 inches. This, of course, is not long enough to admit the whole body of the bird, so that, when sitting, the tail is commonly seen projecting outside the nest. When in this position, the bird is, of course, quite defenceless. The nest which is placed in the midst of bushes, trees, creepers, thick clumps of coarse grass, reeds or bamboos is of rather large size and is shaped roughly like a foot ball and composed of small twigs, leaves and grass, sometimes entirely of twigs and sometimes entirely of grass is invariably lined with green leaves. It is placed in almost any kind of position from three to twenty feet from the ground. It is of a domed form, generally with two openings, through one of which the head of the female protrudes while sitting,and her tail through the other. Occassionally, an open nest is made, in the form of a deep cup with well raised sides.

Normally, two or four eggs are laid. The eggs vary very little in size or shape. They are broad, regular ovals, almost perfectly symmetrical at both ends. They resemble, so far as size and shape go, those of the common Blue Rock Pigeon. They are normally of a dull pure white colour (but sometimes dirty white and often much stained). In texture, they are rather coarse and somewhat chalky, and are not infrequently covered, when first taken from the nest, with a pale, yellowish brown glaze or size, which readily washes off, but which imparts a slight gloss to the eggs so long as it remains.

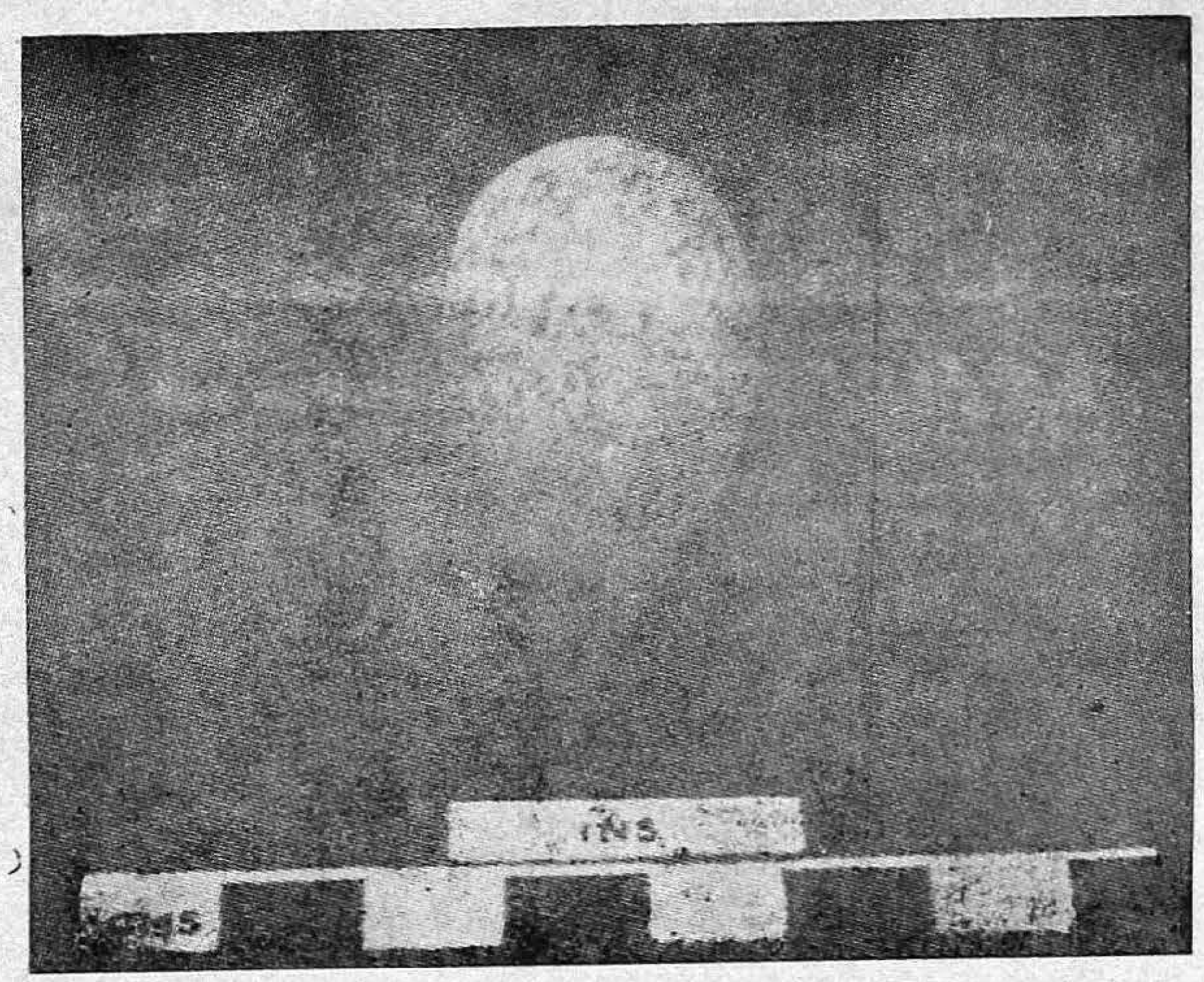

Figure 39. **Eudynamus scolopaceus scolopaceus** (Linnaeus)
(The Indian Koel)

The eggs vary in length from 33·0 mm. to 39·3 mm., and in breadth from 28·4 mm. to 31·8 mm. ; but the average of a large series of eggs is reported to be 36·2 mm. × 26·3 mm.

Specimens in the collection :

One egg, white in colour: the egg is in a damaged condition and hence the measurements could not be determined.

Centropus sinensis parroti (Stresemann).

(=**Centrococcyx rufipennis.**)

(The Indian Coucal or Crow Pheasant.)

The Indian Coucal or Crow Pheasant breeds throughout the plains of Upper India during the rainy season, i.e., from the beginning of June till about the end of August or beginning of September.

Usually they build a huge, globular, domed nest, at varying heights from the ground, in the centre of thick, throny bushes or trees. The nests are usually composed of dry twigs, lined with a few green leaves, but all kinds of odds and ends are at times incorporated into the fabric.

Occassionally quite different materials are made use of, the nest consisting almost wholly of leaves, rushes and coarse grass.

The nests are hollow, oblate-spheroids, some 18 inches in external diameter and 6 to 8 inches in height, with a large hole on one side, from the entrance of which to the back of the nest inside may be 12 inches. This, of course, is not long enough to admit the whole bird, so that when sitting, the tail is commonly seen projecting outside the nest.

But the nest is not always domed. This bird does not also always select dense and inaccessible thickets for its nest. The nest is sometimes found high up on tamarind and other trees, fully exposed to view. The nest is large in size, formed of various kinds of twigs and leaves of the dhak, jamoon, neem, etc. No other materials seem to be used in these nests. The nest, in structure, is not always dome-shaped. Some nests are dome-shaped, but others are simply open nests, about the size of a very large, round plate, with a depression in the centre for the eggs. The thickness at the base and sides, of the twigs and leaves which are both used in the building of the nest, varies from 8 to 10 inches.

In the Nilgiris, these birds build their nests in large, bramble thickets, so that their nests are not easily got at. They put a quantity of sticks together and form a very spacious nest, the materials being placed all round except at the entrance, and also forming a high canopy above. The normal number of eggs is three, though four and even five are at times met with.

The eggs vary little in size or shape—broad, regular ovals, almost perfectly symmetrical at both ends. They closely resemble, so far as size and shape go, those of our Common Blue Rock Pigeon (*Columba intermedia*). The eggs have a rather coarse and hard, chalky shell and are normally of a dull pure white or dirty white colour, but they are not infrequently covered, when first found, with a pale yellowish brown glaze or size, which readily washes off, but which, so long as it remains on them, imparts to them a certain amount of gloss. Occasionally the egg may be nearly spherical and of a nearly pure white colour, but usually they are of a dirty white colour, and often much stained.

The eggs vary in length from 33.0 mm. to 39.4 mm., and in breadth from 28.4 mm. to 31.8 mm., but the average size of a large series is reported to be 36.6 mm. x 29.5 mm.

Specimens in the collection :

Two eggs : (i) Length : 36 mm.
Breadth : 30 mm.
Colour : White.

(ii) Length : 39 mm.
Breadth : 30 mm.
Colour : White.

Centropus bengalensis bengalensis Gmelin.

[(=Centrococcyx bengalensis (Gmelin)].

(The Lesser Coucal).

Nests and eggs of this bird have been obtained during May, June and July. The nest is usually found in long, coarse grass and is also composed of the leaves of the same grass, the ends of the grass being turned down and then up all round. The nest is a large one, about 12 inches long and 8 inches broad. There is only one hole.

In Sikkim, the nest of this species has been found usually up to 3,500 feet, but during the breeding season it has been found occassionally as high as up to 5,000 feet so that it probably breeds up to that elevation. It frequents dense, grassy jungle, and fixes its nest two or three feet from the ground in the middle of a large *Saccharum* or other grass plant by bending over a few of the grass stems to make a resting place for it. It is composed of pieces of long, dry grass and bamboo leaves put together rather loosely, and surrounded by the ends of the bent stems which are twisted right over it and partly worked in with the dry material. In shape it is a roundish oval, measuring externally about 10 inches in height by 8 inches in width. The cavity is 4 to 5 inches in diameter and is lined with a few green leaves . The entrance, which is at the side, is three inches in diameter.

The normal number of eggs is three, but sometimes two are found, and the breeding months are usually May and June.

The eggs are moderately broad ovals, somewhat cylindrical, and very obtuse at both ends. The eggs are pure white when laid, but acquire, as incubation proceeds, brownish yellow stains, and a greater general glossiness. The egg shell is rather fine, very chalky in apperance, but smooth to the touch and exhibits a slight gloss at all times.

The eggs vary from 28.7 mm. to 31.8 mm. in length, and from 23.1 mm. to 25.1 mm. in breadth.

Specimens in the collection :

Two eggs : (i) Length : 32 mm.
Breadth : 25 mm.
Colour : White.

(ii) Length : 33 mm.
Breadth : 25 mm.
Colour : White.

ORDER STRIGIFORMES.

Family STRIGIDAE.

Tyto alba javanica De Wurmb.

(=Strix javanica).

(The Indian Barn Owl).

The Indian Barn Owl or Screech Owl lays from the middle of February to the middle of June.

They breed in holes of old buildings or in wells. In some instances, the eggs appear to be laid on the bare ground, but with a few grass-stems or feathers about them; in others, there is a small stick nest, much like that of a pigeon.

They normally lay three or four eggs, but occasionally they have been known to lay even six or seven eggs.

Sometimes they lay their eggs in large holes in the trunk of large trees and at heights ranging from 9 to 12 feet from the ground. But there is no nest of any kind in these holes.

The eggs, like those of all owls, are unspotted, white, but most of the specimens have a very faint creamy tinge. In shape, the eggs appear to be more oval and less round than those of the European species, *Strix flammea*, to which they closely approximate. Of all our Indian species of Owls, this species (*Tyto alba javanica*) lays the least spherical egg. The texture is compact and fine, but there is less gloss than in most species of this family.

The eggs vary from 39.4 mm. to 45.5. mm. in length, and from 30.5 mm. to 34.3.mm. in breadth ; but the average size appears to be 42.9 mm. by 32.5 mm.

Specimens in the collection :

Two eggs : (i) Length : 36 mm.

Breadth : 29 mm.
Colour : White.

(ii) Length : 36 mm.
Breadth : 29 mm.
Colour : White.

Bubo bubo bengalensis (Franklin).

(The Indian Great Horned Owl.)

The Indian Great Horned Owl breeds from the end of November to the end of April, but, as a rule, most birds breed in February, March and April, although eggs are occasionally met with in December and January also.

The birds make no nest, but scoop a small hollow in the earth. The eggs are laid in this hollow on the ground, generally in a cave or on a ledge of a cliff. They often choose some little cave or recess or some projecting ledge in a rocky or earthy cliff in the neighbourhood of water, often in nullahs and ravines, merely sheltered by shrubs or the roots of a tree. The precipitious banks of canals and rivers appear to be favourite breeding places, and they almost invariably seem to select a cliff-face facing westwards.

The usual number of eggs laid is three or four, but only two are sometimes incubated. Occassionally, as many as five eggs are laid.

The eggs of this species appear to be very uniform in size and shape. They are very perfect, broad ovals, white, with a faint, creamy tinge. They are, except for a slight superficial glossiness, scarcely distinguishable from those of the Mottled Wood Owl (*Syrnium ocellatum*). In texture, they are finer than the eggs of the Dusky Horned Owl (*Bubo coromandus coromandus*), and, compared to the size of the bird, seem to be rather small.

The eggs vary from 50.3 mm. to 55.9 mm. in length, and from 41.9 mm. to 45.7 mm. in breadth ; but the average of ten eggs measured is 53.3 mm. by 43.9 mm.

Specimens in the collection :

One egg : Length : 59 mm.

Breadth : 49 mm.

Colour : White.

Bubo coromandus coromandus (Latham).

(The Dusky Horned Owl).

The Dusky Horned Owl has a wide range of distribution in India, extending over a greater part of the Indian Peninsula. The vast majority of the Dusky Horned Owls lay in December and January, but the breeding season of this species ranges from late November up to February and a few birds have been observed to lay even in March and early April. As a rule these owls make use of the deserted nest of some Eagle, but sometimes they construct their own stick-nests, or merely use the hollows between the branches of some big tree. The same pair resorts to the same nest for several successive seasons and adds to them yearly, and consequently the nests are at times enormous in size. They are usually located in the fork of some large tree. Old nests of the Tawny Eagle, placed on some thick and thorny Acacia tree are sometimes appropriated by the Dusky Horned Owl. They use the same site year after year, and when they build their own nests, they keep on adding sticks and lining to them so that they often assume huge dimensions. In most cases, the nest contains some lining of more or less green leaves, and a few feathers or some grass. Occasionally the eggs are found laid in the hollow of some huge stump, or in the depression at the fork of three or more large branches, with no actual nest composed of sticks, but only a few dry leaves as a bed.

The eggs normally number two, but occasionally only one egg has been found in the nests. The eggs vary widely in size and shape. Typically they are a broad oval, comparatively very large for the size of the bird, but long, oval, pyriform and nearly spherical varieties also occur. Extreme variations in size are also noticed. Sometimes the cubic contents of one egg may be fully double those of another. In colour they are creamy white, and often somewhat coarse in texture, but nevertheless they are more or less glossy. In some eggs, the markings consist of indistinct lilac blotches, showing through the shell, on a pure white ground ; some eggs are also minutely and profusely spotted, especially at the extreme ends, with brown and lilac spots (or rather specks) of various shades.

The eggs range in size from 55.9 mm. to 64.8 mm. in length, and from 44.5 mm. to 50.8 mm. in breadth. The average size of about fifty eggs measured was 59.2 mm. by 48.0 mm.

Specimens in the collection :

One egg : Length : 56 mm.
Breadth : 43 mm.
Colour : White.

Glaucidium raditaum radiatum (Tickell).

(The Jungle Owlet).

The Jungle Owlet is found throughout the greater part of India, confined to the more wooded and forest-clad tracts of both the plains and the lower hills. It breeds in the early part of the hot weather, laying in April and May, in holes in trees. But occasionally eggs have been taken as early as in February or March.

The eggs, normally two to four in number, are deposited in hollow trees in Jungle, preferably rather thin, deciduous forest, but sometimes in quite dense evergreen forest, especially in the lower hills of the Himalayas, in which it breeds up to about 4,000 feet, though this is exceptional.

The eggs are pure white, smooth and satiny to the touch, but with scarcely any gloss. They are, as a rule, very broad ovals, though some slightly more elongated varieties are met with, and they vary from 1.2 to 1.31 inches and from 1.0 to 1.11 inches in width.

The holes selected are generally natural ones, less often deserted holes of Barbets or Woodpeckers.

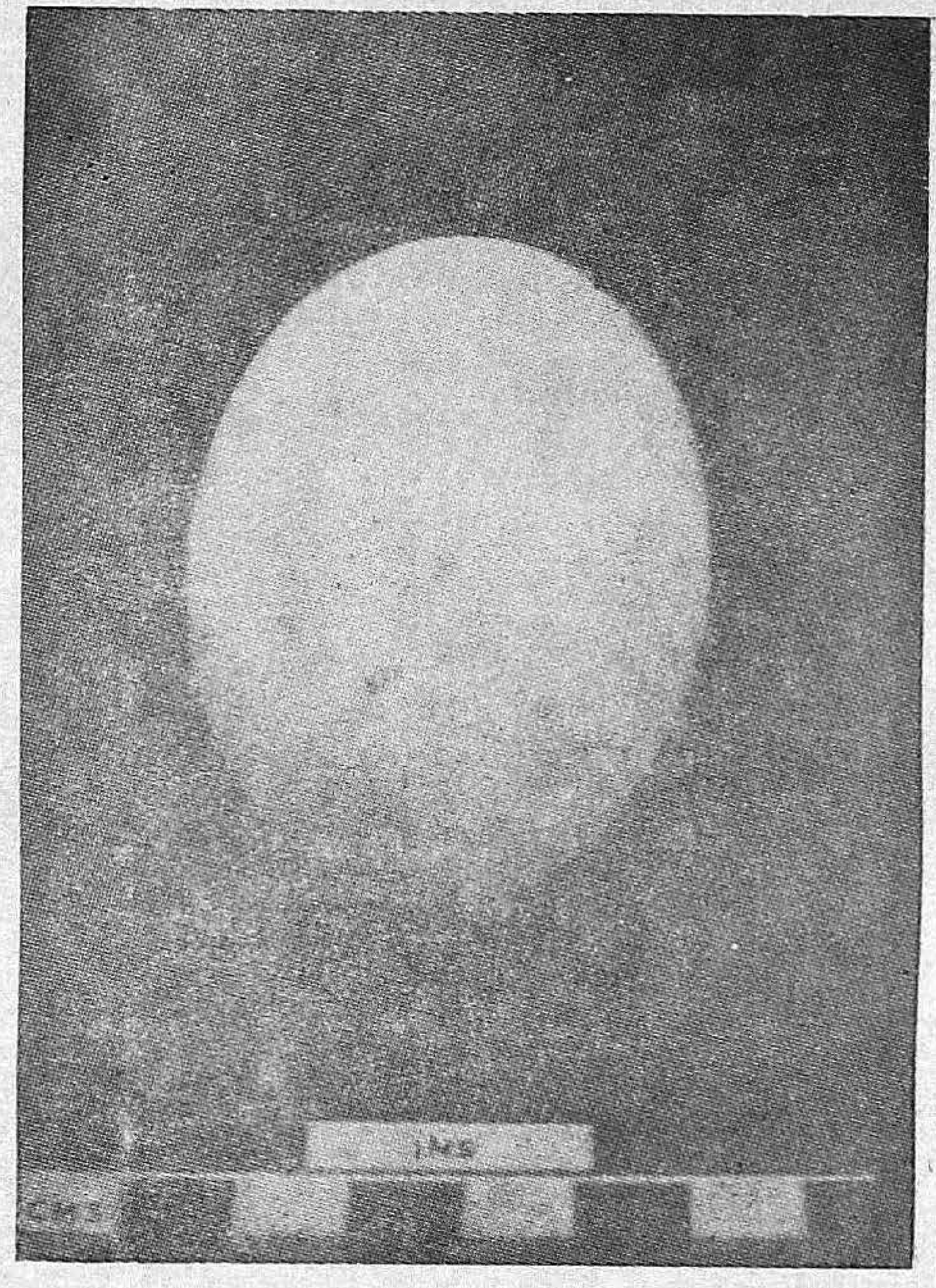

Figure 40. **Bubo bubo bengalensis** (Franklin)
(The Indian Great Horned Owl)

Twenty-eight eggs average 31.5 mm. x 26.8 mm. The maximum dimensions are 34.2 mm. x 27.3 mm. and 31.3 mm. x 27.5 mm. and the minimum dimensions 30.6 mm. x 26.4 mm. and 31.0 mm. x 26.0 mm.

Specimens in the collection :

One egg : Length : 31 mm.
Breadth : 28 mm.
Colour : White.

Athene brama brama (Temminck).

(The Southern Spotted Owlet).

The Southern Spotted Owlet breeds from November to March, but most eggs are laid during February. In Mysore, it is said to lay up to the end of April. The eggs are deposited in holes in trees, in buildings either deserted or occupied or occasionally even in holes in banks and rocks. Sometimes it makes an improvised nest of rubbish upon which to lay it egg, but generally, especially in trees, there is little or no nest. Sometimes it appropriates the nests of Mynas and other birds which build nests in holes in wells, etc.

It usually lays three or four eggs, but occasionally as many as five eggs may be laid.

The average measurements of forty eggs are : length : 31·6 mm.; breadth : 27·0 mm.

The birds often sit very closely and tenaceously on the eggs and will often allow themselves to be caught, and at the same time biting and clawing vigorously at their assailants.

Specimens in the collection :

One egg : Length : 32 mm.
Breadth : 27 mm.
Colour : White.

ORDER CAPRIMULGIFORMES.

Family CAPRIMULGIDAE.

Caprimulgus asiaticus asiaticus Latham.

(The Common Indian Nightjar).

The Common Indian Nightjar breeds over the whole of the plains of India, Burma and Ceylon, except the driest and most deserted portions such as Sind and parts of Rajasthan,ascending in the spring and summer the lower ranges of the Himalayas to a height of 5,000 or 6,000 feet. April and May are the chief breeding months. In Ceylon and Travancore it often lays but one egg, but elsewhere it lays the usual pair, breeding during most months of the year, but perhaps most frequently from February to April and then again in July and August. It prefers open country with a fair amount of bush or cover. The eggs are sometimes found laid in the quite unsheltered spots such as in the middle of a dry pebbly nullah, but at other times it lays in orchards, thin forests or bamboo jungles. Sometimes it lays in large, open spots under large trees. The eggs are usually laid in the bare ground, but sometimes in a depression of the ground among dead leaves.

The eggs are long, somewhat cylindrical ovals, slightly pointed towards one end, with the ground colour varying from a pinkish stone colour to a deep, salmon-pink, blotched, clouded, spotted and streaked with different shades of pale reddish and purplish brown with faint, underlying inky purple clouds and spots. The eggs vary somewhat in size. They look like small editions of those of *Caprimulgus macrourus*(the Indian Long-tailed Nightjar). The largest eggs are scarcely half the dimensions of those of the European

Nightjar) but they average much smaller than those of any of the Indian species of Nightjars except *Caprimulgus artipennis*. The eggs have a faint gloss. The eggs of this species (*C. asiaticus asiaticus*) are perhaps, as a rule, more brightly salmon-coloured than those of any other of our Indian species.

The eggs vary in length from 24·9 mm. to 27·9 mm., and in breadth from 21·5 mm to 21·1 mm.; but the average of one hundred eggs is reported to be 26·5 mm. x 19·9 mm. (about 1·04 inches by 0·77 inch).

Specimens in the collection :

Three eggs : (i) Length 27 mm.
Width 20 mm.
Colour : White, with greyish dots.

(ii) Length : 27 mm.
Breadth : 18 mm.
Colour : Creamy white, with brownish patches and greyish dots.

(iii) Length : 27 mm.
Breadth : 18 mm.
Colour : Creamy white, with brownish patches and greyish dots.

ORDER APODIFORMES.

Family APODIDAE.

Subfamily CHAETURINAE.

Collocalia fusiphaga unicolor Hume.

(The Nilgiri Swiftlet).

The Nilgiri Swiftlets build their nests in company, the nests often being placed in regular tiers one above the other, and often so close that they touch each other. The nest is never composed entirely of saliva, but always consists chiefly of a long, grey thread-like lichen (so common on all trees on the Nilgiris), firmly agglutinated together with the saliva. The nest is a small, shallow, semi-saucer-like structure glued to the rock.

This bird breeds at several places on the Nilgiris during May and June. The nests occur in the darkest parts of caves, generally in complete darkness, and are small but compact, cup-shaped structures, strongly made of lichen which is fastened together and the nest glued to the wall by the mucous secretion of the bird. They measure abont 2½ inches by 2 inches and are very shallow, the egg-cavity not exceeding 1½ inches in the largest, while in many nests the walls are less than an inch above the bottom of the nest. No lining of feathers is used, and the amount of inspissated mucus is very small, the structure being almost wholly of lichen.

The number of eggs is invariably two. The eggs are a dull, almost wholly glossless white; as a rule, they are slender, elongated ovals, almost cylindrical, and are nearly the same thickness at both ends; sometimes they are absolutely cylindrical; at times they are slightly pyriform, and typically somewhat compressed just beyond the middle.

The eggs vary in length from 20·1 mm. to 22·9 mm., and in breadth from 13·5 mm. to 14·7 mm.; but the average size appears to be 21·1 mm. by 13·7 mm.

Specimens in the collection :

Three eggs : (i) Length : 23 mm.
Breadth : 11 mm.
Colour : White.

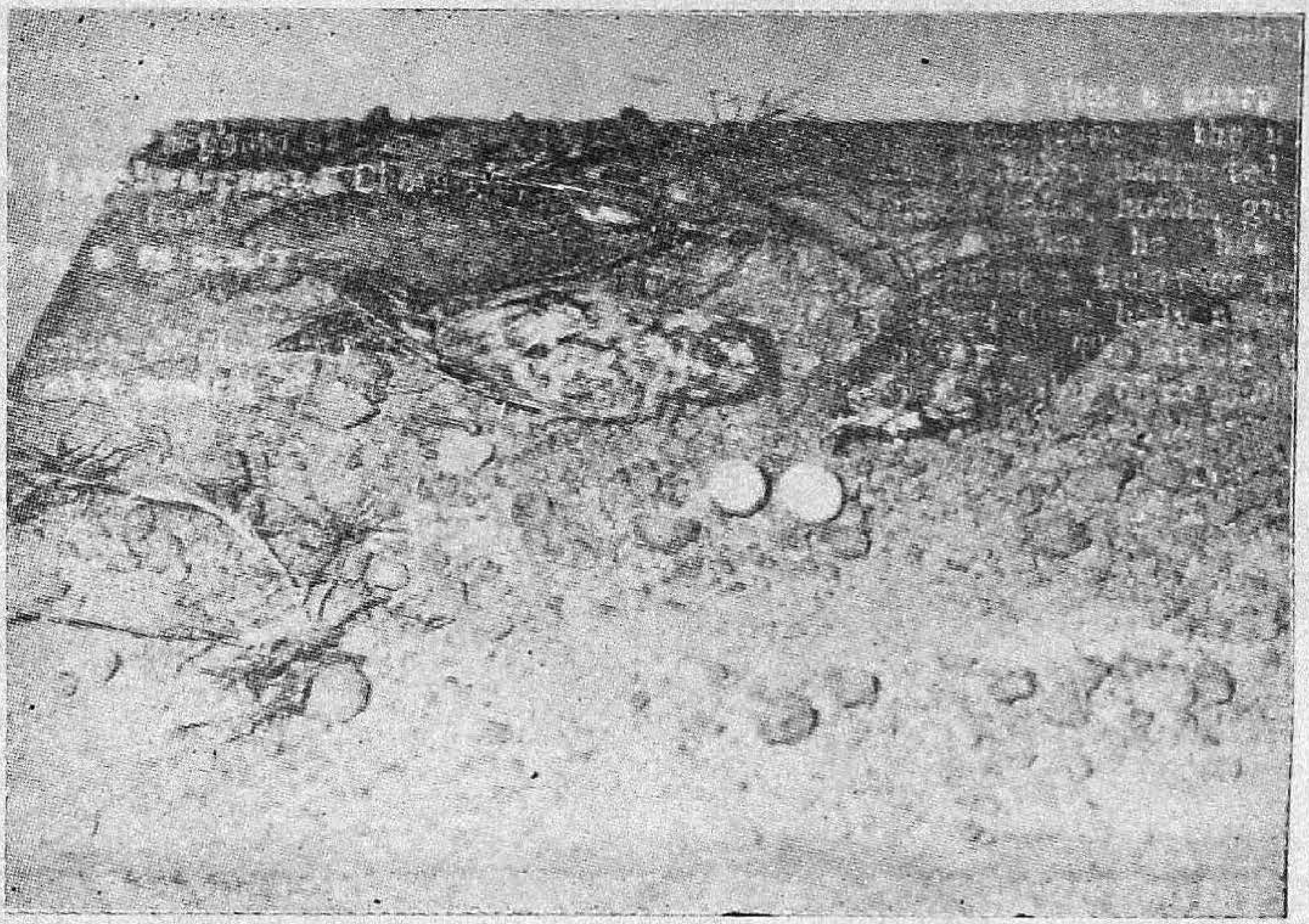

Figure 41. **Caprimulgus asiaticus asiaticus** (Latham)
(The Common Indian Nightjar)

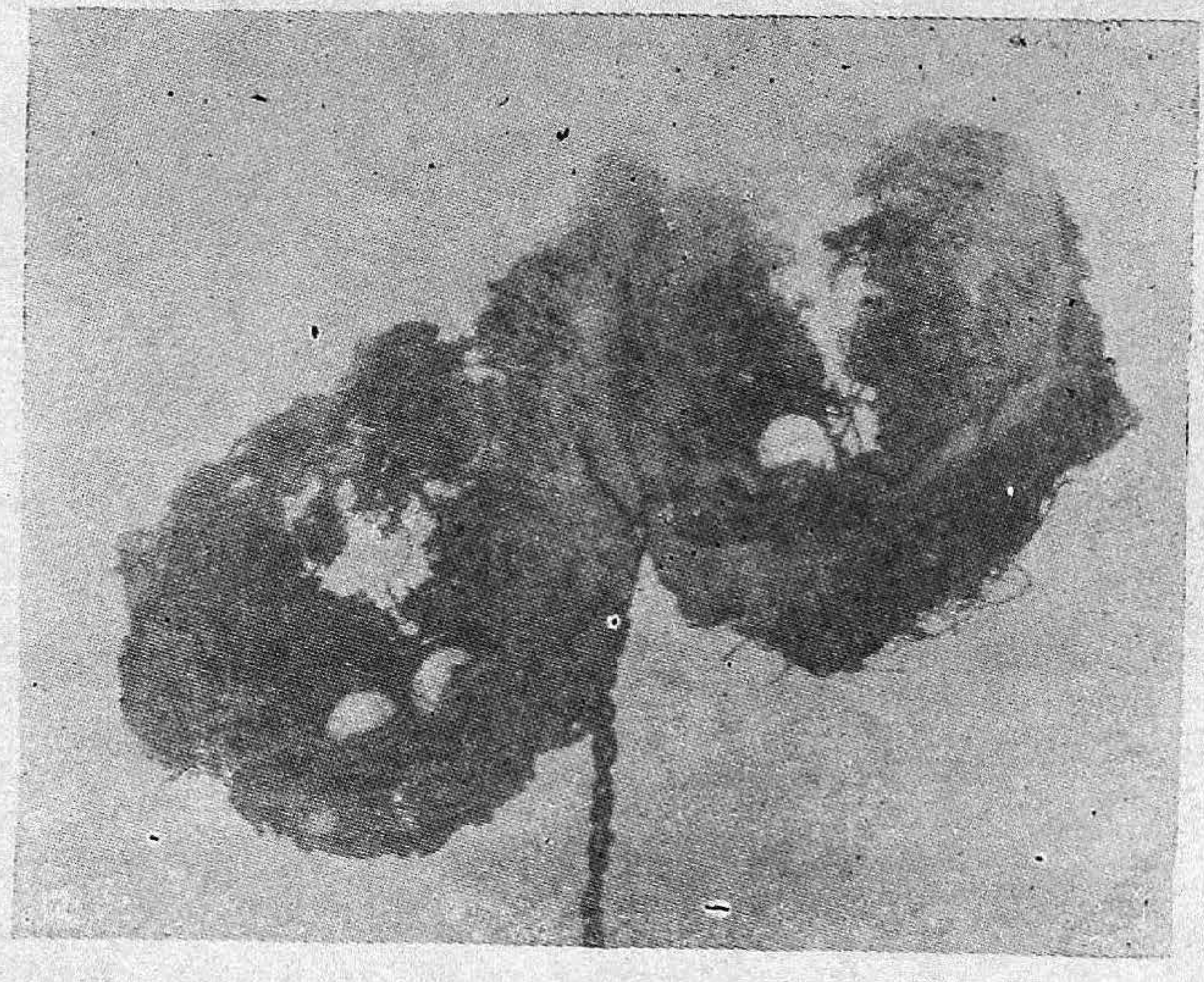

Figure 42. **Collocalia fusiphaga unicolor** (Hume)
(The Indian Edible Nest Swiftlet ; Nest and eggs).

(ii) Length : 22 mm.
Breadth : 10 mm.
Colour : White.

(iii) Length : 21 mm.
Breadth : 11 mm.
Colour : White.

Five nests : (i) Diameter : 85 mm.
Height : 75 mm.

(ii) Diameter : 105 mm.
Height : 45 mm.

(iii) Diameter : 90 mm.
Height : 85 mm.

(iv) Diameter : 90 mm.
Height : 65 mm.

(v) Diameter : 77 mm.
Height : 60 mm.

Subfamily APODINAE.

Cypsiurus affinis (J. E. Gray).

(= **Cypselus affinis**).

(= **Cypselurus affinis**).

(= **Micropus affinis affinis**).

(The Common Indian Swift).

The Common Indian Swift breeds throughout the plains of India and in the Himalayas up to a height of about 6,000 feet.

The species has at least two broods in a year, and eggs may be found any time from February to August both months included. They breed in company; solitary nests are practically unknown. Usually from a dozen to about fifty pairs will be found nesting together.

They nest either clustered together in one dense mass, as when they choose the roof of some little cave, or the interior of some old dome of a mosque, or else scattered about in little groups, in close proximity. as when they occupy a verandah, where each pair of rafters may be found to have about half dozen nests. Perhaps, on the whole, it prefers inhabited buildings to deserted ones.

The nests vary very much in size, shape and material. Sometimes they are in the form of long half-tubes a foot in length and about four inches in external diameter composed wholly of feathers cemented together by saliva and scarcely half an inch in thickness. Some nests are in the form of large masses, measuring ten inches by six inches, and two and half to three inches in thickness, composed of grass, in which many feathers of doves, parrots, peafowl, duck, Sarus Crane, sheep's wool and bits of twine thread are all mingled. The bottom portions are a good deal cemented together by saliva, but the interior is by no means hard or smooth; others, again, are much smaller, globular and having the whole of the materials firmly agglutinated together. In the plains, they are not generally lined, but in the hills they often have a warm lining of grass and feathers.

The Common Swift does not construct a nest of mud like the Common Swallow, but attaches straw, rags, flags and feathers, all together by a glutinous cement, beneath the roof of verandahs between the beams. The nest, although made of such fragile materials which are not inerwoven like those of other nests, but simply glued together, is nevertheless exceedingly tough, and will resist a mcderate poke from a stick. It is lined with feathers and straw.

They breed once in February, and again during the monsoon. The nests are generally built under roofs sometimes in a crevice between the wall and the roof, but often attached, to the roof itself. The nest is generally ornamented both inside and outside with feathers. The nests are generally composed of pieces of straw, fine twigs, cobwebs and fluffy feathers, all agglutinated together, with here and there some brightly coloured feather of a Parrot or Roller stuck carelessly on the outside. The inside of the nest is hard, glistening and smooth.

The normal number of eggs is three. Occasionally two or even four eggs have been found. Typically, these eggs are excessively long and narrow ovals, pointed towards one end, and often somewhat pyriform in shape. They vary, however, much both in size and shape. Some are fully one-third longer than others, In colour, they are a perfectly pure and spotless white with commonly scarcely a trace of gloss, though occasionally a slightly glossy egg is met with.

In length. these eggs vary from 18·3 mm. to 25·4 mm. and in breadth from 13·2 mm. to 15·7 mm.; but the average size is reported to be 22·1 mm. by 14·5 mm.

Specimens in the collection :

Two eggs : (i) Length : 25 mm.
Breadth : 15 mm.
Colour : White.

(ii) Length : 24 mm.
Breadth : 17 mm.
Colour : White.

ORDER CORACIIFORMES

Family ALCEDINIDAE

Alcedo atthis bengalensis (Gmelin).

(The Common Indian Kingfisher).

This little kingfisher breeds in the lower hills in May and June, but in the plains from March until May. The breeding season seems to vary according to locality. In Madras, nests have been observed in January. In the Nilgiris and the Deccan it lays in March. They bore their nest holes in some sand bank immediately overlooking water (preferably running water) at a height of from 6 inches to 5 feet above the water level. They cut out their tunnels and egg chambers in the banks of streams and rivers, tanks and ditches, but prefer running to stagnant water. The tunnels are generally very narrow and short from one to four feet in length. The tunnel, which is barely two inches in diameter, terminates in a little, circular, domed egg chamber about five inches in diameter and three or four inches in height, in which the eggs are laid. After digging is completed, a mass of fish and insect debris soon collects round the entrance of the hole in the egg chamber, the birds disgorging the undigested fish bones, elytra, etc.

The eggs normally number five to seven, rarely eight. They are exquisitely glossy and, when blown, are pure China-white and broadly oval; some of them are almost spherical. They are very much like those of *Merops viridis*, but more glossy, and, as a rule, somewhat less rounded. When unblown, they are pinkish white.

The eggs vary in length from 19·1 mm. to 22·2 mm., and in breadth from 16·5 mm. to 18·3 mm., but the average size yielded by a large series of measurements is about 20·9 mm. x 17·6 mm.

Specimens in the colletion :

One egg : Length : 19 mm.
Breadth : 17 mm.
Colour : White.

Halcyon smyrnensis smyrnensis (Linnaeus).

(The White breasted Kingfisher.)

The White-breasted Kingfisher breeds all over the country from March to July. It lays from four to seven eggs, five being the normal number, in a hole which it excavates for itself, and which varies in length from a little over 1 to more than 3 feet, althougt, as a rule, it does not exceed two feet. This hole is from 2½ to 3 inches in diameter, and terminates in a chamber some 4 inches in height and 8 inches in diameter. Both the passage and the chamber often contain remains of frogs, mole-crickets and the like.

The nest holes are commonly pierced in banks of tanks and canals, or streams, or pretty high up in cliffs overlooking rivers and not uncommonly in the interior of wells, at considerable depths. Usually the bird places in the nest chamber at the end of the shaft, a quantity of moss.

Sometimes this Kingfisher builds a nest consisting merely of a mass of moss which is usually wedged in to the hollow spaces between stones on the banks of streams and nullahs. There is no attempt at fastening the moss or of intertwining it in any way, and the nest appears to consist of layers of moss placed one on top of the other.

Typically, the eggs of this species are very shperical and some are almost perfect spheres, but here and there a very broad oval takes the place of the sphere. The eggs are pure white, but are often of a beautiful pinkish tinge, owing to the colour of the yolk showing through the thin, delicate shell. The eggs are often more or less discoloured as incubation proceeds, but when fresh they bea ra beautiful, delicate gloss similar to that observable on the eggs of Rollers and Bee-eaters. Unlike the eggs of these species, however, the eggs of kingfishers rapidly lose their gloss, and, as a rule, long before the eggs are ready to hatch off they have entirely lost that brilliantly polished appearance which distinguishes them when freshly laid. In size the eggs vary greatly ranging from the size of the Bee-eater's egg to that of the Roller or even longer.

The eggs vary in length from 26·7 mm. to 32·3 mm., and in breadth from 24·6 mm. to 28·4 mm., but the average size of forty-eight eggs measured is 28·7 mm. x 26·2 mm.

Specimens in the collection :

Three eggs in a nest excavated in the form of a tunnel in the sand bank of a river. The nest is reconstructed for display in a vertical mud wall in which the tunnel is shown in longitudinal section.

Three eggs : (i) Length : 30 mm.
Breadth : 28 mm.
Colour : White.
(ii) Length : 31 mm.
Breadth : 28 mm.
Colour : White.
(iii) Length : 31 mm.
Breadth : 28 mm.
Colour : White.

Although the eggs are white, portions of their surface are slightly soiled by pale greyish brown spots.

Nest : Overall length of tunnel : 600 mm.
Height: 55 mm. : Depth : 60 mm.
Egg chamber (i.e., dilated end of tunnel) :
Height : 120 mm. ; Depth : 130 mm.

Halcyon smyrnensis fusca (Boddaert).

(The Indian White-breasted Kingfisher)

This race is distinguished from the typical form, *H. smyrnensis smyrnensis* in being more bluish and less greenish on the upper parts and the centre of the back is generally of a deeper blue colour. It is also more widely distributed within Indian limits, occurring in Ceylon and throughout Peninsular India, particularly in the heavy rainfall zone of South west India. This species is less dependent on water than other species of kingfishers and usually frequents wet paddy fields, village tanks, canals, steams and the sandy shore.

This Kingfisher breeds throughout its range from January to August, but mainly from April to July and somewhat earlier in Ceylon and South India, wherever there are rivers and streams of sufficient size. Normally it makes a tunnel for its nest on the steep bank of usually a dry nullah or in the side of a dry ditch, the tunnel usually sloping slightly upwards. It generally prefers light sandy soil and in these the tunnel often exceeds six or seven feet in length. In harder soil the tunnel is about 7 cm. in diameter and 50 cm. to a metre or more in length. Hume is reported to have taken one clutch of eggs from a well at 100 feet below the ground level and another from the mud bastion of an old fort. The tunnel ends in a widened egg chamber about 8 or 9 inches in diameter, without any lining, but usually found littered with bones and putrified remains of prey brought for the young. The digging of the tunnel in a vertical bank is initiated by both the male and female birds of a pair which push their strong bills into the earth in full flight vigorously one after the other in quick succession until a circular indentation is made large enough for gaining a foothold and further deepening the tunnel. Thus both sexes share in excavating the nest tunnel and even in incubation and parental care and feeding of the young.

In the Cachar Hills in Assam some birds select banks in tiny streamlets running through dense evergreen forests. In these they do not dig any tunnel but make use of natural hollows plugging them with muddy green moss until the entrance is small enough to suit their requirements.

The eggs range from four to seven in number, but normally five or six eggs are laid ; they are pure white and more or less spherical ovals. Typically the eggs are very spherical —a characteristic feature of the eggs of all species of kingfishers of this genus.

The eggs vary in length from 26·0 mm. to 31·1 mm., and in breadth from 25·0 mm. to 28·0 mm. The average size of 100 eggs measured is reported to be 28·9 mm. × 26·2 mm. (Stuart Baker).

Specimens in the collection :
One egg : Length : 30 mm.
Breadth : 27 mm.
Colour : White.

Family MEROPIDAE

Merops philippinus philippinus Linnaeus.

[=**Merops superciliosus javanicus (Horsfield)**].

(The Blue tailed Bee-eater).

The Blue tailed Bee-eater breeds over nearly the whole of its range during April, in well cultivated and open country, making its nest holes in the banks of rivers and streams Where, however, it breeds away from the areas subjected to the monsoon floods, it often lays up to the middle of June. Like the other species of this family, it breeds in holes in banks and lays usually four or five eggs. The tunnel is usually a long one, rarely less than four feet and sometimes extending even to seven to nine feet. In diameter they vary from 2 to 2½ inches (i.e., about 55 to 70 mm.). At the far extremity of the tunnel, a rounded chamber

Figure 43. **Halcyon smyrnensis smyrnensis** (Linnaeus)
(The White-breasted Kingfisher)
(Nest in excavated tunnel, with eggs)

as a rule not less than 6 inches in diameter and about 4 inches in height, is hollowed out. This is the egg chamber in which the eggs are laid. At times this chamber has a thin lining of grass and feathers which is not found in the egg chambers of other species of Bee-eaters.

The normal number of eggs in a clutch is about five or six, but they lay from four to seven eggs.

The eggs are white, highly glossy and very spherical ovals. They average considerably smaller than those of the European Bee-eater, but otherwise they are perfectly identical with these.

The eggs vary in length from about 22·0 mm. to 25·1. mm., and in breadth from 18·2 mm. to 21·3 mm. The average size of one hundred eggs is reported to be 23·2 mm x 20·1 mm.

Specimens in the collection :

One egg : Length : 20 mm.
Breadth : 18 mm
Colour : White.

Merops viridis Linnaeus.

(The Green Bee-eater).

The Green Bee-eater breeds pretty well all over India, though less commonly in damp, low-lying localities, such as Orissa and Bangala Desh. It breeds principally during April, sometimes in late March, and at other times in early May, over the whole of its range, except in Ceylon, in which island they lay from April until August.

They build their nests in holes in the ground, generally preferring the perpendicular face of a nullah or an embankment. The opening of the nest is circular, about 1¾ inch in diameter and cleanly cut. The nest-hole varies in depth, according to the soil in which it is dug, from a foot or eighteen inches to some six feet. The first portion of the burrow is generally a descending line. The passage usually declines at an angle of 30° and then rises again before the egg chamber is reached. The favourite sites chosen for breeding are low cliffs, roadside banks, artificial banks round gardens and cultivation or even burrow pits from which road material has been taken. Often, however, it digs for its nest in almost level ground. The excavation is carried on very quickly and is continued until a sufficient depth is reached. The eggs are laid on the bare ground. There is no actual nest constructed, but sometimes when a burrow is used for more than one year, as is often the case, there is a considerable bed of insect remains. It often happens that the egg chamber is occupied by the remains of mole-crickets, spiders, toads or frogs. The egg chamber is about 4 inches in diameter while the tunnel itself varies from about 18 inches to 4 or 5 feet in depth.

The normal number of eggs laid is about three or four, but five, or occassionally even seven eggs have been found in a single chamber.

The eggs are nearly spherical in shape and look like little polished alabaster balls. They show how close are the affinities, despite external differences of form, between the Meropidae, Alcedinidae and Coraciidae. In size, the eggs of the various species of these families, of course, differ, but in every other respect they appear to be identical. The eggs of *Merops viridis* are rather small for the size of the bird, and are milky white and brilliantly glossy. Occasionally, a somewhat oval or pyriform egg is met with, but as a rule, they are almost perfectly spherical in shape.

The eggs vary in length from 17·3 mm. to 21·8 mm., and in breadth from 16·3 mm. to 18·5 mm. But the average size of a very large series is 19·8 mm. by 17·8 mm. The average size of another series of one hundred eggs measured is reported to be 19·3 mm. by 17·3 mm.

Specimens in the collection :

One egg: Length : 21 mm.
Breadth : 18 mm.
Colour : White with brownish spots.

Family CORACIIDAE.

Coracias indica Blanford & Oates.

(=**Coracias bengalensis bengalensis** (Linnaeus).

(The Indian Roller or Blue Jay).

The Indian Roller or "Blue Jay" breeds from the end of March to the end of May, and in some areas right up to the end of July ; in North India, the great majority of the birds of this species lay in April and June. They lay their eggs, usually four in number, in holes of trees, in old wells and buildings and sometimes under the eaves of the thatched roofs of houses. Occasionally, the eggs are laid on the bare wood or on the material forming the bottom of the hollow, if the hollow is selected in a building. Usually, however, a certain amount of material, grass, straw and rubbish is collected and placed in the hollow to form a bed for the eggs, and sometimes a great deal of feathers, grass and other material is used as lining for the nest ; but where they build in a small-mouthed hole, there is usually a very scanty lining. Mango and tamarind trees and dead palm trees seem to be favourite sites for building the nest. In old and very rotten trunks of dead palms, the birds themselves easily excavate the dead wood and make a convenient hole for the nest.

The usual number of eggs is four, but more rarely, five eggs are laid.

The eggs are very broadly oval-shaped, in some instances almost spherical, and like those of the Bee-eaters, they are pure China-white and highly glossy. In appearance the eggs are exactly similar to those of *Coracias garrula* (the European Roller.)

During incubation, the cock bird always perches close by when his mate is sitting and normally the hen bird does not leave the whole until an intruder is very close to it. The egg takes about eighteen days to hatch.

The eggs vary in length from 31·8 mm. to 34·3 mm. and in breadth from 24·6 mm. to 28·4 mm. ; but the average size appears to be 33·0 mm. × 26·9 mm.

Specimens in the collection :

Three eggs: (i) Length : 34 mm.
Breadth : 29 mm.
Colour : White.

(ii) Length : 35 mm.
Breadth : 29 mm.
Colour : White.

(iii) Length : 34 mm.
Breadth : 29 mm.
Colour : White.

Family UPUPIDAE.

Upupa epops orientalis Linnaeus.

(The Indian Hoopoe).

The Indian Hoopoe breeds from February to May in different parts of India. They nest in holes in trees, walls or banks, never at any great elevation from the ground, and occasionally in the roofs and between the rafters of houses. Very little nest is made as a rule ; a little hair, a few feathers, leaves or fine grass stems, carelessly strewn over the floor of the hollow or hole, constitute their apology for a nest, and when the holes of trees are resorted to, there is often absolutely no nest at all. The female alone incubates, and, expecially when the eggs are about to hatch, scarcely ever leaves them for a moment, being assiduously tended by the male, which brings her food constantly.

The normal number of eggs is from four to seven, but smaller numbers may often be met with, fully incubated, while eight or nine eggs are also laid to be occasionally met with.

This species breeds in the Nilgiris during April and May, laying seven eggs in the hollow of a tree or in holes in old wells. The hole or hollow is often lined by a few dried leaves and small twigs. The same hole is used year after year, although the eggs are removed each time. Sometimes the eggs are laid among the rafters of houses, and often in the nooks and crevices formed by the twisted aerial roots of the banyan tree (*Ficus indica*). If laid in the roofs of houses, the eggs are generally laid on a little layer of rubbish and thatching grass, but in holes of trees sometimes no attempt is made at lining the hole.

The eggs are commonly in the shape of very lengthened ovals, almost always strongly pointed towards one end, and sometimes showing a tendency to be pointed at the other end too. In colour, they vary somewhat, mainly according to whether they are fresh or more or less incubated when obtained. When quite fresh, they are of a pale greyish blue tint, or of an opaque greenish blue colour, without spots ; they are generally of the colour of skimmed milk, but many are of a pale olive brown or dingy, olive-green colour, and every intermediate shade of colour is met with. The shell is thick and rather rough and, as a rule, they scarely have any gloss at all, and are quite devoid of markings. They are deeidedly smaller, and, as a rule, more elongated than the eggs of *U. epops* (the European Hoopoe).

The eggs vary in length from 22·9 mm. to 26.7 mm., and in breadth from 16.5 mm. to 18.5 mm. ; but the average size appears to be 24.6 mm. x 16.8 mm.

Specimens in the collection :

Three eggs: (i) Length: 22 mm.
Breadth : 18 mm.
Colour : White.

(ii) Length : 25 mm.
Breadth : 17 mm.
Colour : White.

(iii) Length : 25 mm.
Breadth : 18 mm.
Colour : White.

Upupa epops epops Linnaeus.

(The European Hoopoe).

The European Hoopoe though a common visitor to the plains of India during the cold season, breeds in India only in the Western Himalayas.

These birds lay during April and May, and possibly in June also, in hollow trees, as a rule, but occasionally in holes in the walls of ruined temples. They appear generally to make some little nest, a little grass and a few feathers being placed as bed for the eggs. Sometimes, a quantity of soft hair is added to the usual complement of grass and feathers.

They lay normally from four to seven eggs. In some instances the cock bird has been observed to be bringing food to the hen. This appears to prove the theory advanced that the Hoopoe like the Hornbill, remains on her nest all the time until the eggs are hatched.

The European Hoopoe arrives during March, and commences to breed soon after.

The eggs are similar to those of the Common Indian Hoopoe,but considerably larger. They are somewhat elongated ovals, devoid of gloss, varying in tint from pale bluish or very pale skim-milk blue or nearly white to pale greenish grey. The eggs are rough and chakly in texture and oval in shape and without any markings, but they are often a good deal stained in the process of incubation.

The eggs vary in length from 26.9 mm. to 30.5 mm., and in breadth from 16.0 mm. to 19.1 mm. ; but the average size of numerous eggs measured is 29·0 mm. by 17.8 mm.

Specimens in the collection.

One egg: Length : 28 mm.
Breadth : 19 mm.
Colour : Dull light brown.

ORDER PICIFORMES

Family CAPITONIDAE

Megalaima zeylanica zeylanica (Gmelin).

(=**Thereiceryx zeylanicus zeylanicus**).

(=**Cyanops zeylonica**).

(The Ceylon Green Bee-eater).

This bird breeds from March to August and probably has several broods in the year. It hollows out with its powerful bill a hole in a rotten tree, just large enough to allow of its entering the egg cavity which is some distance down the trunk or branch. It sometimes uses even a rotten fence-post for making its nest hole. It does not use the same nest twice, but having found a tree with wood suited to its work, perforates it each year for the new nest, as many as eight or ten holes being sometimes visible in a tree by a jungle roadside. It is only when sounding wood before making their nests that these birds tap the trunks with their bills, the blows being very slowly repeated, with perhaps an interval of ten seconds between each. There are generally a few bents and grass stalks collected for the eggs to rest on but scarcely enough to make an appreciable nest.

The eggs are three or four in number, pure dull white, glossy and rather round in shape and are laid on a few stalks of dried grass which line the bottom of the cavity.

The eggs measure on an average about 27·9 mm. to 21·2 mm. in length and 22·9 mm. to 24.1 mm. in breadth. Eggs of this species from South Travancore appear to be smaller in average size.

Specimens in the collection:

One egg: Length: 30 mm.
Breadth: 23 mm.
Colour: White.

(The egg is in a slightly damaged condition).

Megalaima viridis (Boddaert).

(=**Thereiceryx viridis**)

(The Small Green Barbet).

The Small Green Barbet has a very extended breeding season. In the Nelliampathy Hills, eggs of this species have been taken in February, while in the Nilgiris they have been known to breed from March to early June. These birds breed very commonly on the Nilgiris in the trunks or larger branches of dry and partially decayed trees. They usually excavate their nest holes in dead trees, though they will some times cut out in wood which is externally quite sound, but they normally prefer to excavate only in such wood as is very rotten or decayed, and soft. In some suitable trees they continue to breed for several years in succession, usually cutting a new entrance each year. It is not unusual to find three or four clutches in the same nest. The nest hole is found at varying heights in the tree trunk, ranging from as high as 50 feet up to as low as to feet down in a decayed stump. As a rule, the nest holes are about ten to fifteen feet from the ground and the eggs are generally about nine inches from the entrance to the hole, but sometimes not more than six inches from the entrance.

The nest holes vary considerably both with regard to the depth of the entrance tube, and also with regard to the depth of the egg chamber. The hole is shaped something like a report with a very short neck.

The eggs number two to four, generally three. but occasionally even five eggs are found. They are pure dull white, rather glossy, and more or less broad ovals, being generally nearly as thick at the smaller end as at the larger end, but in this, as well as in size, they vary considerably. Nothing is used to line the hole, the eggs being merely laid on a few chips of decayed wood.

The eggs vary in length from 27·2 mm. 31·0 mm. and from 19·1 mm. to 24·4 mm. in breadth; but the average size is reported to be 28·7 mm. × 21.8 mm.

Specimens in the collection:

One egg: Length: 30.mm.
Breadth: 22 mm.
Colour: White.

Megalaima haemacephala indica (Latham.)

(=**Xantholaema haemacephala lutea**).

(The Indian Crimson-breasted Barbet).

The Crimson-breasted Barbet, or the Coppersmith as it is usually called, breeds principally in February, March and April in South India. In Northern India, it has a very prolonged breeding season, for though most birds lay between March and May eggs have been taken in Poona as early as the 15th January and in Lucknow as late as October. In Central and Southern India, as a rule, it begins to lay earlier.

Almost any trees in any situation may be selected for excavating the nest hole. Isolated trees in cultivated land, mango trees in an orchard or trees in gardens by roadsides or in towns and villages also serve for this purpose at different times.

Generally, the entrance to the nest is made on the underside of a bough somewhere between six and sixteen feet from the ground, a rotten, semi-decayed branch being usually chosen.

Sometimes it fixes upon a branch, hollow from end to end, and with a wide natural aperture, but in these cases it generally cuts a new entrance nearer to the bottom of the cavity, some two inches in diameter, always on the underside of the bough. As a rule, like other species of this family, these Barbets seem to be able to find out branches that are decayed internally, although externally to the human eye, exhibiting no sign of this, and into such, through the harder external shell of the branch, they cut a perfectly circular hole with the edges neatly levelled off inside and out. The eggs are at the bottom of the cavity into which they have thus bored (and which they smoothen a good deal interiorly), often a couple of feet below the *door*, and laid merely on the chips of wood produced in the course of the work.

The hole varies in length from 1 to 4 or 5 feet, and the diameter of the chamber, when, as sometimes happens, this is cut entirely by the birds themselves in sound, though soft, wood, scarcely exceeds four inches. The birds often use the same hole year after year, but generally lengthen it each season. They seem to have a preference for decayed and hollow branches of the neem tree for making their nests.

The eggs are normally four in number, but they may vary from two to four.

Typically the eggs are almost cylindrical, tapering somewhat towards one end, but the ends themselves are broad and obtuse. The eggs are long, narrow, pure white and have a fragile shell which is devoid of all gloss. The eggs, however, vary much in size, and within certain limits in shape also. Here and there a tolerably perfect oval egg may be met with, and a slightly pyriform variety is occasionally obtained. When fresh and unblown, like so many eggs of this type, they have a delicate pink blush.

The eggs vary in length 22·1 mm. to 27·2 mm. and in breadth from 15·7 mm. to 18·3 mm.; but the average size of a very large series is 25·1 mm. × 17·5 mm. The average size of fifty eggs measured is cited by Stuart Baker as 25·0 mm × 17·7 mm.

Specimens in the collection:

Four eggs: (i) Length: 25 mm.
Breadth: 18 mm.
Colour: White.
(ii) Length: 27 mm.
Breadth: 19 mm.
Colour: White.
(iii) Lengh: 26 mm.
Breadth: 19 mm.
Colour: White.
(iv) Length: 26 mm.
Breadth: 18 mm.
Colour: White.

Family PICIDAE

Dinopium benghalense benghalense (Linnaeus).

(=Brachypternus benghalensis benghalensis).

(The Golden-backed Woodpecker).

The Southern race, *Dinopium benghalense puncticollis* which is found in South India, ascends the hills of Southern India up to about 3,000 feet, but the nidification is similar to that of the Northern, typical race, *Dinopium benghalense benghalense*.

Over North India, this bird breeds in great numbers wherever the country is suitable and seems to have two breeding seasons, first from March to the end of April and again from the middle of June to August, many birds probably having two broods. It selects trees in thin forest or in the open, and is very common around towns and villages, breeding in the mango orchards. As a rule, the entrance is made quite low down on the tree trunk between five and fifteen feet from the ground, but sometimes it is very high up, and occasionally even nearer the ground.

In most cases, a hollow branch or trunk is selected, the birds merely cutting an entrance into this which may be about three to four and half inches in diameter. They use the same nesting site for several years in succession but have a curious habit of carving a new entrance each season, however good and convenient the old one may be. If a living branch is selected for boring, a very short tunnel only is made, but when the branch is decayed, the tunnel may be as long as three feet.

The eggs normally number four or five, but three and occasionally two only are incubated. They are of the usual glossy, China-white colour. As usual, the greater part of the incubation is carried out by the male, and the birds probably pair for life.

The largest eggs measure 30·6 mm. × 19·0 mm. and 28·6 mm. × 23.0 mm. and the smallest once measure 26·0 mm. × 20·6 mm. and 27.5 mm. × 18·9 mm. The average size of fifty eggs measured is reported to be 18·1 mm. × 20·9 mm.

Brachypternus benghalensis benghalensis:

Specimens in the collection:

Two eggs: (i) Length: 29 mm.
Breadth: 22 mm.
Colour: White.

(ii) Length: 29 mm.
Breadth: 21 mm.
Colour: White.

Brachypternus benghalensis puncticollis:
Specimens in the collection:—
One egg: Length: 26 mm.
Breadth : 20 mm.
Colour: White.

Iynx torquilla torquilla Linnaeus.

The European Wryneck.

This is a winter visitor to India, having its summer quarters in Spain, Northern Europe to West Siberia and Turkestan. In winter it migrates southwards and eastwards to Northern Africa, South Europe and the greater part of India, but principally on the western side and in South India.

This species breeds during May and June, laying its eggs in small natural hollows in trees, or, less often, in holes in banks such as deserted burrows of Sand Martins. It lays six to ten eggs. The eggs are pure white, of a soft, but close texture and not hard and glossy as is usua es the case of the eggs of the Picidae.

The average size of one hundred eggs measured is 20·4 mm x 15·3 mm. (Stuart Baker). The maximum size of the eggs recorded are : 22·5 mm. x 15·5 mm. and 21·5 mm. x 16.5 mm.; and the minimum sizes recorded are : 17·5 mm. x 14·5 mm. and 19·0 mm. x 14·0 mm.

Specimens in the collection :—
One nest : Diameter : 90 mm.
Height : 280 mm.

ORDER PASSERIFORMES.

Family PITTIDAE.

Pitta brachyura brachyura (Linnaeus).

(The Indian Pitta).

The Indian Pitta breeds during July and August. The nests are huge, globular structures about nine inches in horizontal diameter and six inches high, with a circular aperture on one side. They are generally composed internally of fine twigs and grass roots, and externally of dry leaves, held in their places by a few roots or twigs. The internal cavity is about four inches in diameter. The nests are generally placed in brushwood and scrub jungle, either on the ground on low branches close to the ground.

Few eggs of Indian birds are more beautiful than those of this species. In shape, they are rather very broad and regular ovals; some, indeed, are almost spherical. They are extremely glossy, perhaps more so than those of any other species. The ground colour is China white, sometimes faintly tinged with pink, sometimes creamy; they are speckled and spotted with, or in some eggs even marked with fine, hair-like lines of maroon, dark purple and sometimes brownish purple, as primary markings, and pale inky purple as secondary ones. The primary markings are scattered, in some instances pretty thickly, in others very sparingly, over the whole surface of the egg, but are always much denser towards one end, to which in some eggs they are entirely confined, and here alone the secondary markings are at all conspicuous. Here they form a sort of nimbus round all the spots, blotches and lines, all the interstices between which they occupy and unite to form an

irregular mottled cap. In one type, which is not uncommon, the whole egg is devoid of markings, except within a broad zone near one end, and even here they consist of only widely scattered and minute specks of maroon and pale lilac.

The eggs vary in size from 24·4 mm. to 27·2 mm. in length and from 20·6 mm. to 22·9 in breadth; but the average size appears to be 25·7 mm. by 21·8 mm. approximately.

Specimens in the collection :

One egg : Length : 27 mm.

Breadth : 21 mm.

Colour : White with prominent black spots.

Family ALAUDIDAE.

Alauda gulgula gulgula Franklin.

(The Indian Skylark.)

All the races of the Indian Skylark breed at the same season (from the middle of April to nearly the end of June), build the same kind of nest, and lay the same number of precisely similar eggs.

The nest is always placed on the ground in a shallow depression, usually scratched by the birds themselves, under the shelter of some clod of earth, large stone, tuft of grass or other herbage, or dense, stunted bush. It consists merely of a deeper or shallewer cup or saucer of fine grass, in many cases a mere lining to the hole or depression, in others a regular nest, the interior always being composed of the finest grass. Five is the maximum number of eggs laid, but three is the usual number.

The eggs are usually greyish white, mottled and speckled all over with two shades of light brown. All the eggs of this species from Northern India vary from moderately broad ovals, at times a good deal pointed towards the small end, and fairly glossy. The ground colour in some eggs is greyish white and in others yellowish white, and all are densely speckled, spotted, freckled and even blotched with pale yellowish and purplish brown or very pale inky purple.

Eggs of this species from the Nilgiris in South India almost exactly resemble those of the northern races. They are moderately elongated, very perfect ovals, and belong mostly to two types of colouring :—one has a cream-coloured ground and is speckled and freckled excessively finely all over with tiny specks and spots of dull, pale purplish grey and very pale brownish yellow; in the other type, the ground is nearly pure white, and the markings, though similar in colour to those of the other type, are darker in shade, and much less densely set.

Eggs of these types present very different appearances according as the markings are coarser and finer, and as the purplish grey or brownish yellow predominates. Most of the eggs are more or less glossy; some have a fair amount of gloss.

The eggs vary in length from 18·8 mm. to 22·4 mm., and in breadth from 14·2 mm. to 16·8mm.; but the average size is reported to be 20·3 mm. by 15·5 mm.

Specimens in the collection :—

One egg : Length : 22 mm.

Breadth : 16 mm.

Colour : Cream coloured with black patches.

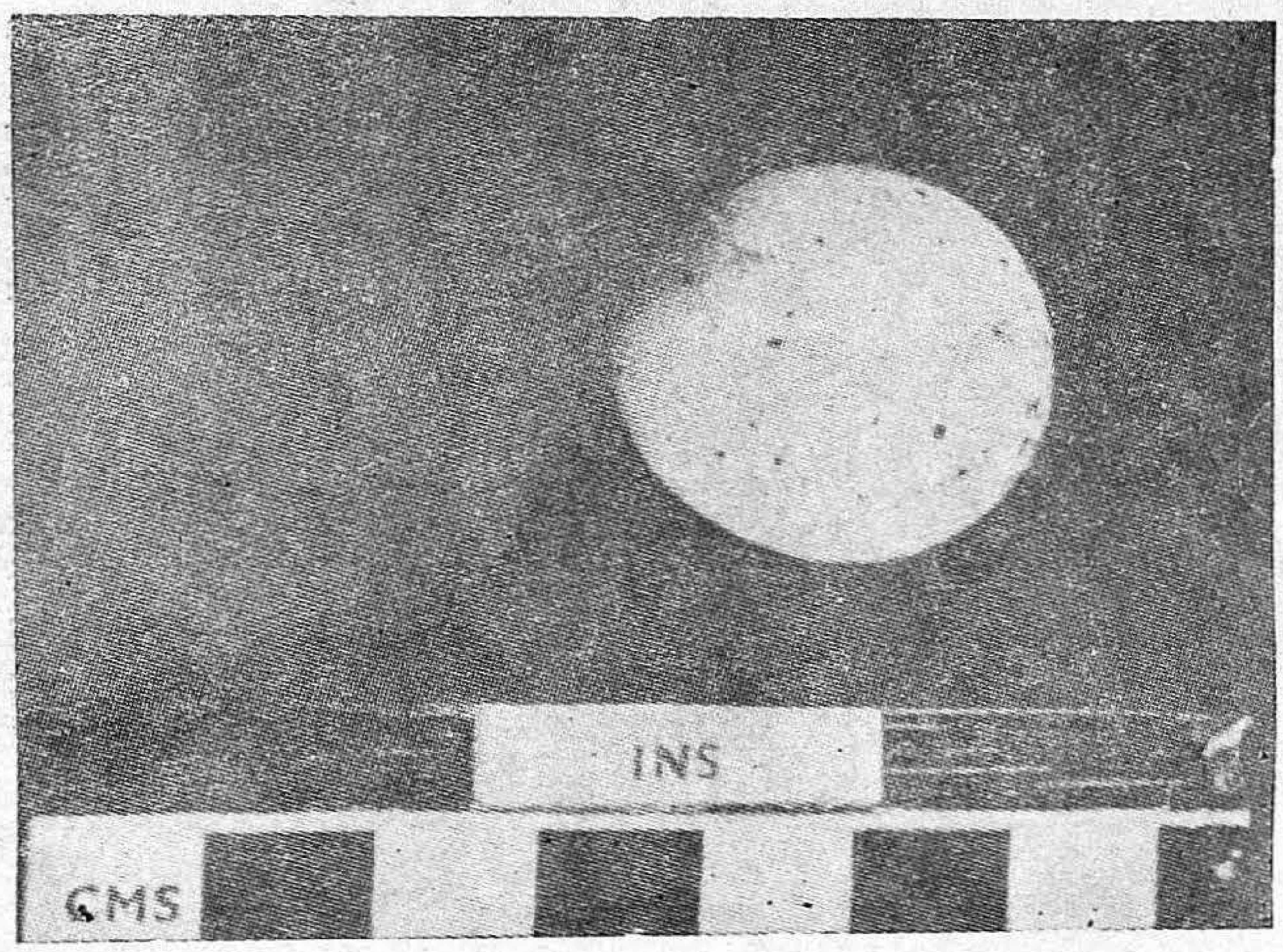

Figure 44. **Pitta brachyura brachyura** (Linnaeus)
(The Indian Pitta)

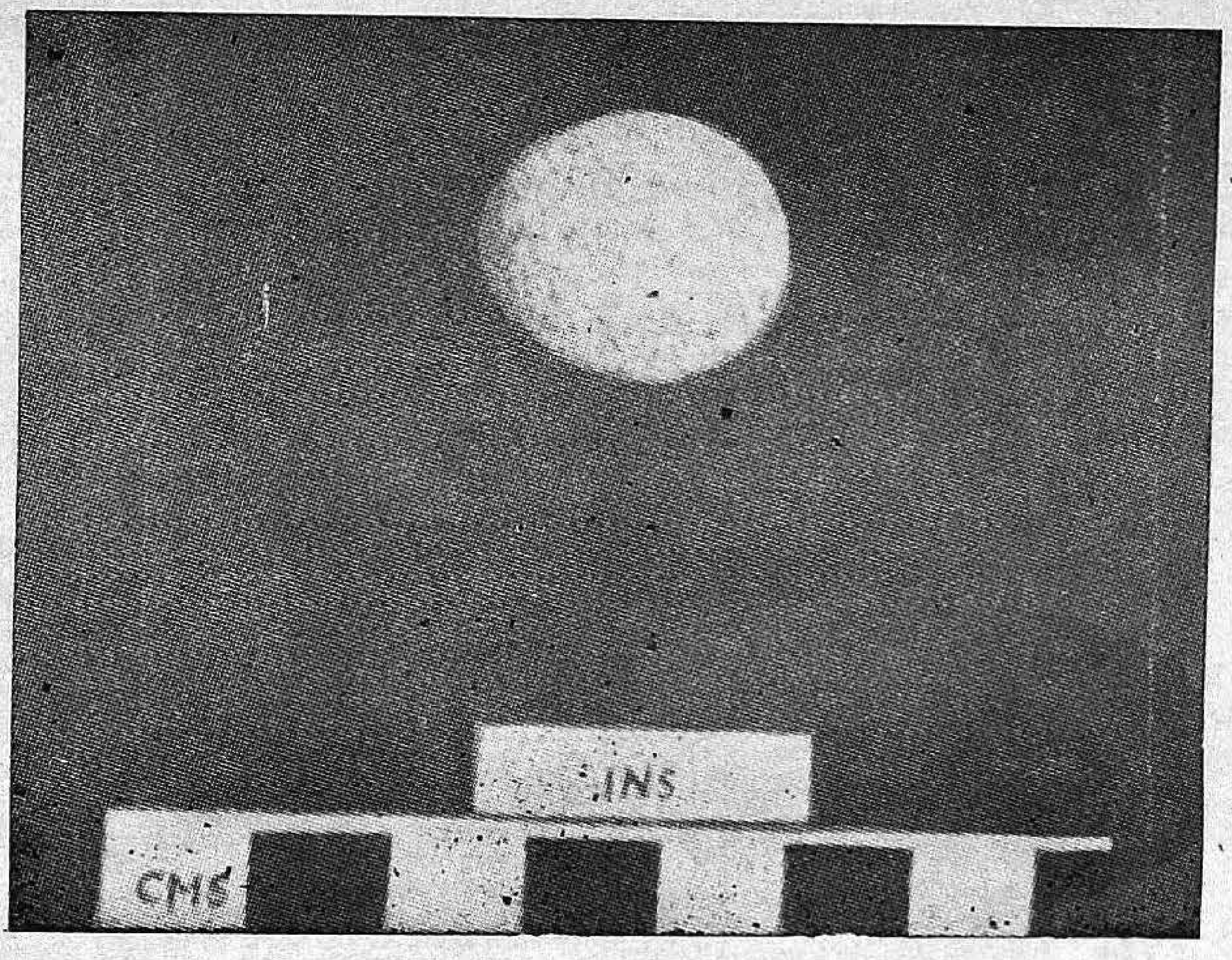

Figure 45. **Alauda gulgula gulgula** (Franklin)
(The Indian Skylark)

Galerida deva (Sykes).

(Syke's Crested Lark)

The Syke's Crested Lark breeds in suitable localities, namely, dry, open, more or less cultivated lands throughout a considerable portion of Central and Southern India.

The breeding season lasts from June to August, but the great majority of eggs of this species are taken only during the month of August in Northern India.

They build their nests on the ground in dry, open, thoroughly drained country, always placing the nest in a depression in the soil of greater or lesser depth, and often concealing it entirely behind an overhanging clod, or at the roots of a thick bush, or within a dense clump of grass.

The nests of this species are small, rather oblong, shallow cups, measuring externally about 3 to 4·5 inches in diameter, and 1·5 to 2.25 inches to 4·5 inches in height, rather compactly and densely put together with coarse vegetable fibre and by no means fine grass. The egg cavity has no lining and measures from 2 to 3 inches in diameter and an inch to 1¼ inch in depth.

A grass patch is generally selected for the nest which is always made on the ground, and, as far as possible, well concealed in the patch or bush under which it is sheltered. The nest at the base is made of coarse roots and grass to about an inch or 1 inch in thickness. On the upper surface of this is placed grass of a finer texture, with occasionally *khus* intermixed. The centre of the nest is a hollow of 1½ inch to an inch in depth. The grass of the nest is closely put together, forming on the whole a compact structure. The total diameter of the nest averages about five inches.

The eggs are typically rather short, broad and oval, a good deal pointed at times towards the smaller end. The eggs are white with minute ashy looking spots, sometimes of light brown, all over, but more dense towards the broad end. Some eggs have a clear greenish white ground and are richly and thickly spotted and speckled, but most densely at the large end, with reddish and orange brown intermingled with tiny, faint, inky purple clouds. In this type of eggs, the markings are clear and well defined.

The majority of the eggs, however, have a creamy yellow ground and are thickly and very finely freckled and crowded all over with faint inky purple and yellowish brown, the markings everywhere ill-defined and almost confluent.[Other eggs have a greyish or yellowish white ground, and are streaked and spotted, or clouded and speckled, with greyish, earthy or olive brown.

The eggs of this species are more variable than those of any other species of Lark, and they are also more glossy than those of the majority of the species of this family.

The eggs vary from 18·5 mm. to 21·8 mm. in length, and from 14·0 mm. to 16·5 mm. in breadth; but the average size of thirty-nine eggs measured is reported to be 19·5 mm. by 15·2 mm.

Specimens in the collection:—

One egg: Colour: Cream-coloured with brownish patches and dots.

(The egg is in a damaged condition; hence the measurements could not be determined.)

Ammomanes phoenicurus phoenicurus (Franklin).

(The Rufous-tailed Finch Lark.)

The Rufous-tailed Finch Lark occurs all over Northern India west of a line drawn from the Rann of Kutch to Delhi. It is common in Sambhulpur, Jubbulpur, Saugor and Jhansi Districts, and in Gwalior, and is not rare in Agra, Aligarh and Eastern portions of Rajasthan. Eastwards its distribution extends to Bangala Desh with the Ganges as the Northern boundary and southwards to Mysore and Kerala. It is a resident species, but shifts its feeding ground according to seasons. It breeds in many parts of Southern India where the climate and soil are not too damp to suit it.

The breeding season lasts from the end of February to April, but March, April and the first week of May is the period during which most eggs are laid. However, occasionally, eggs may be found in February and in late May. This Finch Lark is one of the most regular and consistent of all Larks in its breedings habits. The nest is usually placed in a depression either natural or scraped out by the birds, under a clod of earth in ploughed fields. Sometimes it is made under shelter of a stone or rock, or more rarely still, under a bush or among the roofs of grass. Often this Finch lark makes its nest on the ground where there is no hollow, but in such cases it builds up a little retaining wall of small stones all round the nest.

The nests are typically in the form of small circular pads of fine grass or roots, sometimes sparsely lined with softer materials. The nests, however, vary considerably; when placed in a hole in a bank it is well made and thickly lined with wool, hair or other soft material; when placed under a clod or other shelter it is more shallow, and is roughly put together, being composed of grass and roots and thinly lined with wool, etc.

The eggs number three or four, sometimes only two, and resemble those of other species of Larks. The eggs have but little gloss, and in shape they are moderately elongated oval slightly pointed towards the smaller end. The ground colour is typically creamy or pale yellowish white, but varies from pure white, which is exceptional, to pale yellowish or greenish stone colour, pretty densely speckled all over with tiny blotches and freckles of reddish or yellowish brown with secondary or underlying markings of natural tint and lavender colour. The speckling is often most dense at the large end, and in some eggs the markings form a dense ring round the larger end and less often an irregular cap. The very pale inky purple or lavender secondary blotches and spots which are only faintly visible are intermingled here and there with the primary markings of yellowish or reddish brown.

The eggs vary in length from 21·6 mm. to 23·4 mm., and in breadth from 16·0 mm. to 17·3 mm. But the average size of fifty eggs measured is reported to be 21·2 mm. x 15·7 mm. (Baker).

Specimens in the collection :—

One egg : Length : 23 mm.
Breadth : 16 mm.
Colour : Cream-coloured, mottled with pinkish blotches.

Family HIRUNDINIDAE

Hirundo concolor concolor Sykes.

(=Ptyonoprogne concolor concolor (Sykes).

(The Dusky Crag Martin.)

The Dusky Crag Martin is found throughout the greater part of India from the Nilgiris Hills in the South to the Himalayas, but not in Sind. Eastwards its distribution extends to Bihar and the drier districts of West Bengal.

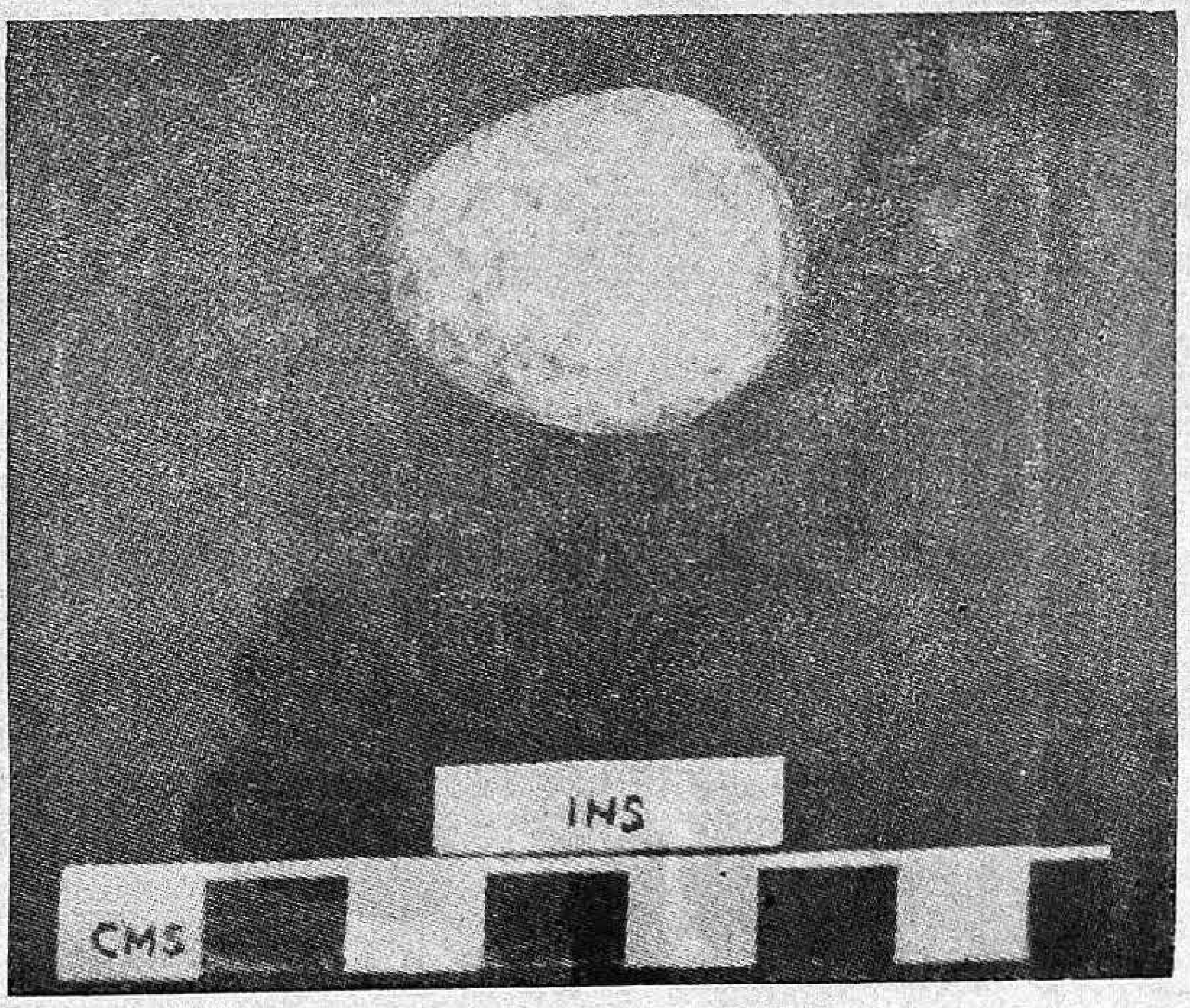

Figure 46. **Ammomanes phoenicurus phoenicurus** (Franklin)
(The Rufous-tailed Finch Lark)

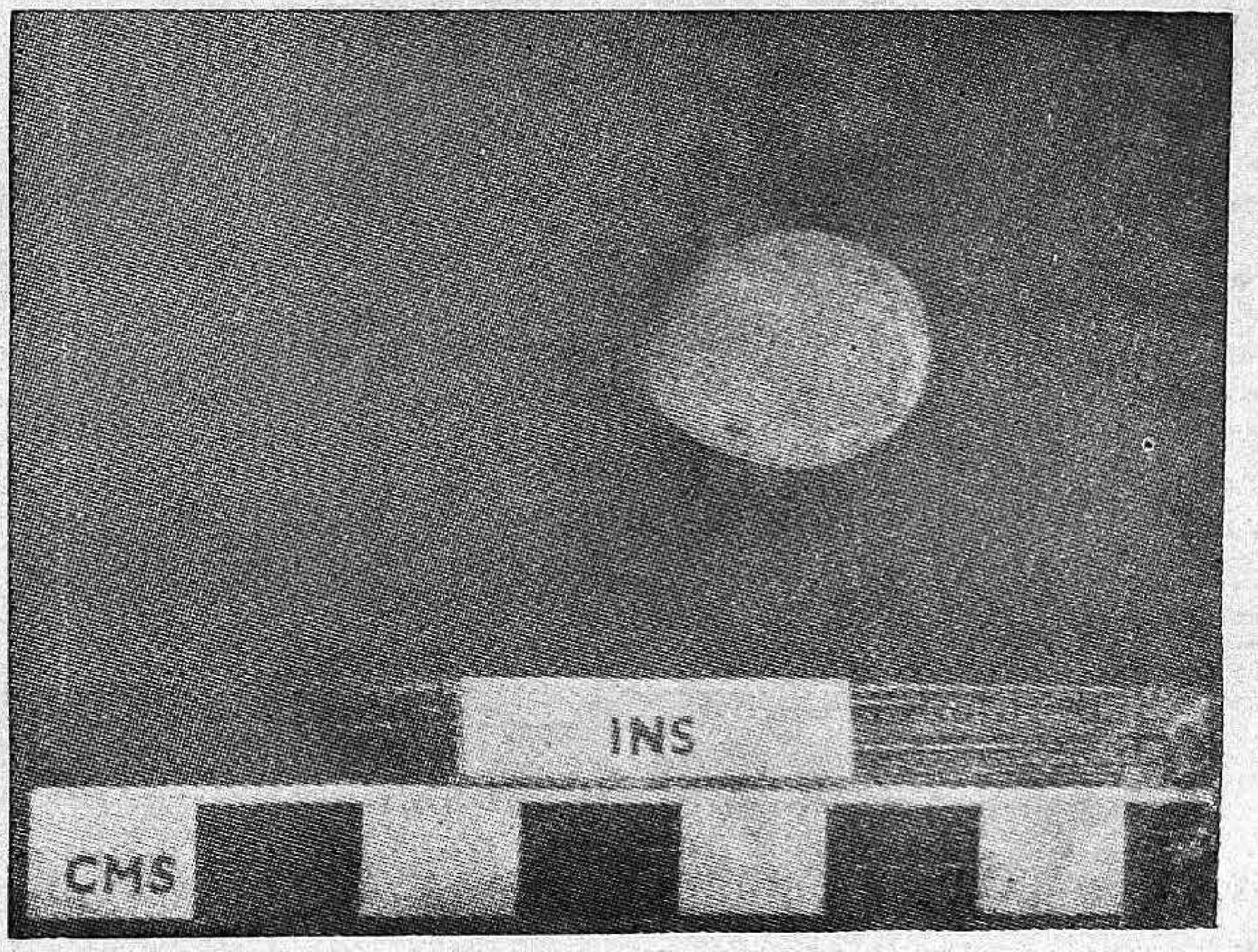

Figure 47. **Hirundo concolor concolor** (Sykes)
(The Dusky Crag Martin)

This species breeds at least twice a year. In the plains of India the eggs are laid mostly in January, February and July, and in the hills, particularly in the Nilgiris, it breeds generally in April and May. Unlike so many of our Indian Swallows, the Dusky Crag Martin does not breed in communities, though in suitable places many nests may be built quite close to one another.

The natural habitat of this species is amongst rocks and on the face of cliffs and the site chosen for the nest is any convenient wall or cliff. They also build their nests inside verandahs of houses, in the walls of wells, in old forts or mosques, or against the rocks of cliffs and river banks. Sometimes they build their nests on the windows and porches of houses. The nest is the typical type of nest made by species of Swallows generally. It is a half-cup open above all round, made of pellets of mud and thickly lined with soft feathers, and attached to the wall or cliff by one side.

The eggs number three or four and are like those of *Ptyonoprogne rupestris*, the Crag Martin, but much smaller, broader and less pointed. The eggs are more rounded than those of any of our other species of Swallows and are minutely speckled with brown, especially about the thick end. The usual number of eggs is three, but occasionally four eggs are laid.

The ground colour of the eggs is white, and they are all more or less thickly speckled, spotted at times, though rarely, blotched with different shades of yellowish and reddish brown. The eggs are pretty thickly marked. The markings are always most dense towards the broad end, where a more or less ill defined zone or irregular partial cap is not uncommon.

The eggs vary in length from 17·3 mm. to 19·1.mm., and in breadth from 12·7 mm. to 14·2 mm. The average size of one hundred eggs is reported to be 17·6 mm. x 12·8 mm. (Baker).

Specimens in the collection:

One egg : Length : 19 mm.
Breadth : 14 mm.
Colour : White, with dirty brownish blotches and spots.

Hirundo daurica nepalensis Hodgson.

(Hodgson's Striated Swallow.)

This is the larger of our Indian Mosque Swallows and breeds exclusively in the Himalayas, without the Indian limits.

It is very common about the houses of most of our hill stations, but constructs its nest by preference under the eaves and in the verandahs of empty houses. Its nest is also often to be seen under projecting ledges of cliffs, and occasionally, where these occur, in ruined buildings.

The breeding season appears to last from April to August.

The nests are long and retort-shaped, very neatly built with clay pellets, as a rule very warmly lined first with grass or fibres and fine roots, and then with various sized feathers, of which there is often quite a bunch. The nest is always a half-retort, fixed to the under side of an overhanging rock or cave generally with only one entrance.

When far removed from houses, these birds resort to lofty rocks, beneath the ledges of which the nest is placed. Its shape is flattish hemispherical with some variation, being at times more globose, with a long neck forming the entrance passage and thus giving the nest a retort shape. When the bird has selected the spot on which it intends to build it usually deposits a white, chalky substance, by way of cement, against the wall or beam as the case may be, as an adhesive foundation for the subsequent wall of mud. Without this

precaution, the weight of the materials would cause it to part from its foundation. The same whitish earth may also be seen in the narrow neck of the nest, more especially at the mouth, where stregnth is required to resist the constant abration that would otherwise ensue from the frequent entrance and exist of the bird.

In the construction of the nest, the mud is laid on in small lumps, which gives a crude and knotty appearance to the surface . The lining is abundant and is composed of fine grass and feathers.

There are frequently two broods from the same nest in the same season, the first in the end of May and beginning of June, the other in July and August.

The eggs of this species are similar to those of *Hirundo erythropygia* (Syke's Striated Swallow) except that they are slightly larger. They are long ovals, slightly compressed towards one end, pure white, the shell being of exquisite fineness, and somewhat, but not very, glossy.

The eggs vary in length from 20·6 mm. to 22·6 mm. and in breadth from 14·0 mm. to 15·2 mm. ; the average size is reported to be 21·6 mm. x 14·0 mm.

Specimens in the collection :

One egg : Length : 23 mm.
Breadth : 16 mm.
Colour : White.

Hirundo tahitica domicola Jerdon.

(= **Hirundo javanica.**)

(The Nilgiri House Swallow.)

The Nilgiri House Swallow breeds on the western side of these hills from February to April, rearing two broods in immediate succession. The nest is composed of pellets of mud, thickly lined with feathers, open at the top, with the saucer-like depression rather deep; it is usually placed in some building, have, or aganist some well sheltered-rock. The nest is somewhat irregular in its external shape, and has a rather shallow, cup-like egg cavity some 2½ inches in diameter The same nest is occupied the following year. They lay from two to five eggs. Should the nest be destroyed a fresh one is built on the same site.

The eggs of this species closely resemble of those *Hirundo rustica*, but are decidedly smaller and somewhat less glossy. They are moderately broad, very round ovals and slightly compressed towards one end. They have a pinky white ground colour and are very finley speckled and spotted, thinly at the small end, and more densely at the large end, where there is a tendency to form a zone, with different shades of dull purple and brownish red. In some, the markings are comparatively large and coarse, in others excessively minute, and the intensity of the colour of the markings varies much in different specimens.

The eggs vary in length from 16·3 mm. to 19·6 mm., and in breadth from 12·2 mm. to 14·5 mm ; but the average size is reported to be 17·8 mm. x 12·7 mm.

Specimens in the collection :

One egg : Length : 18 mm.
Breadth : 15 mm.
Colour : White, with greyish patches and dots.

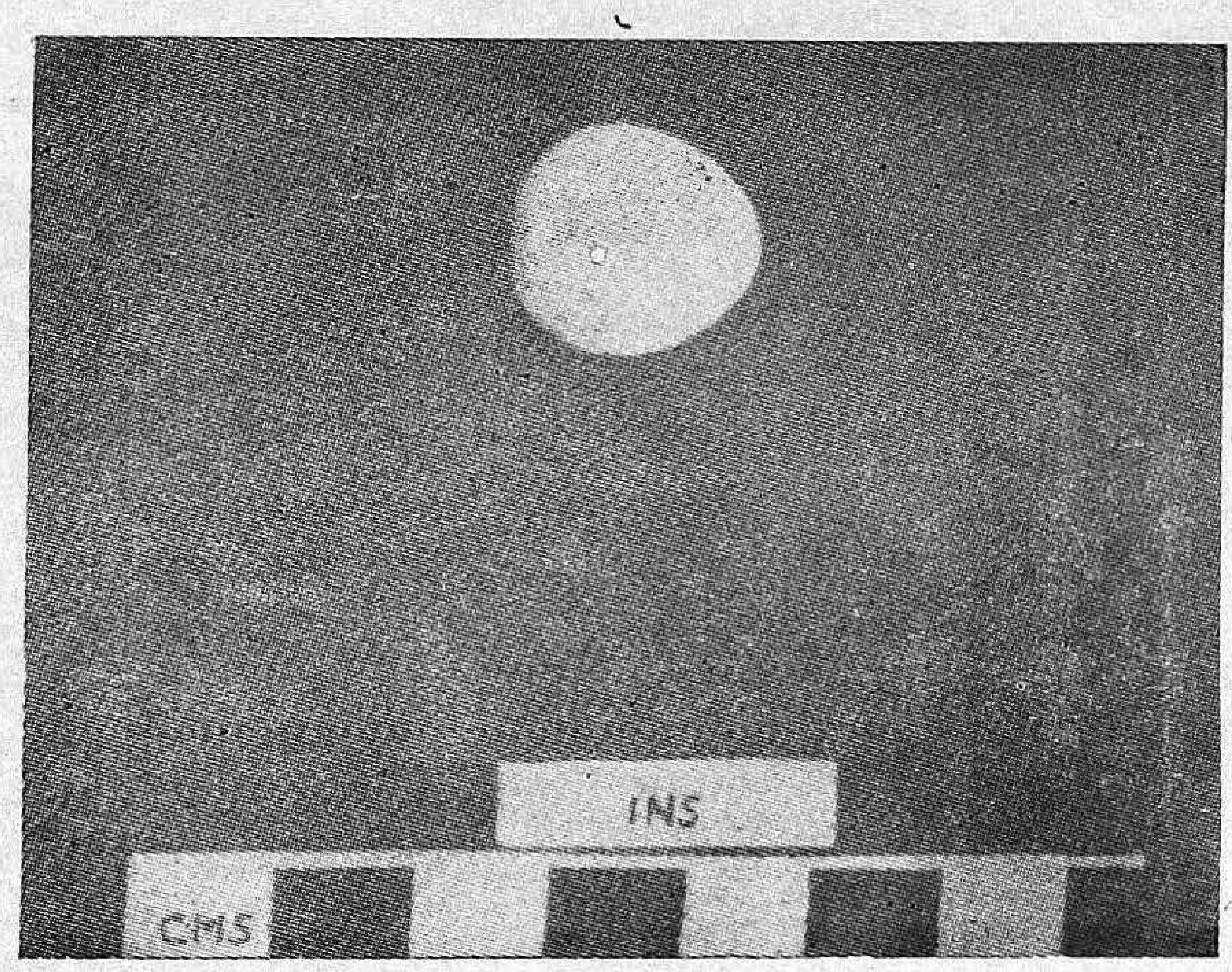

Figure 48. **Hirundo daurica nepalensis** (Hodgson)
(The Nilgiri House Swallow)

FAMILY MOTACILLIDAE

Motacilla maderaspatensis Gmelin.

(The Large Pied Wagtail).

The Large Pied Wagtail breeds throughout India from north to south, only avoiding the low country of Bengal proper. In the Himalayas, it is never found at elevations exceeding 3000 feet, but it ascends the mountains of Southern India to any elevation at which water occurs, and breeds at Ootacamund.

Throughout the country, March, April and May are the months in which they chiefly lay, more eggs being met with in April than in any other month. But on the Cauvery, eggs are met with both in December and in January. They always nest in the neighbourhood of water, but with this sole reservation, they place their nests almost anywhere. These may be found in holes in banks, crevices in rocks, under stones, under clods of earth, amongst the timbers of bridges, in drains, boles in wells, on roofs, and in fact anywhere except on shrubs or bushes. The nests are always down on something solid.

The character and materials of the nest are quite as varied as the situations on which it is placed ; as to character, it varies from almost a tiny depression on the bare earth up to a neat, well formed, saucer or shallow cup ; as to materials, they seem to make use of any material which is tolerably soft ; fine twigs, grass roots, wool, feather, horse- cow- or human hair, string, coir, rags and all kinds of vegetable fibres seem to be indifferently used.

Four is the normal number of eggs laid, though occasionally five are met with, and sometimes only three.

The eggs differ very much in size and shape, and vary from a long to a rather broad oval. They are always more or less pointed towards the small end. In the general shade of the egg and in the colour and extent of the markings they vary excessively. There are, however, two leading types—one in which the prevailing tint is greenish, a greenish white ground, with greenish brown markings ; and the other in which the general colour is brown, with dingy white markings on a pale, earthy-white ground. Each of them again, is divisible into two classes—those in which the markings are comparatively distinct and leave a good deal of the ground colour, especially towards the small end, visible ; and those in which they are nearly confluent everywhere, only leaving the ground colour to peep through in specks, or as feeble, paler mottling. Even this last class is again divisible into two types —one in which the markings are excessively close speckling, and the other in which they are close, smudgy mottling. Generally, it may be said that the ground colour (of which more or less is visible in different specimens) varies from pale brownish to greenish white. The markings are clouds, smudges, streaks, spots and specks; sometimes all these forms are exhibited in one and the same egg, but more commonly, one or other form greatly predominates so as to give its own peculiar character to the egg. The colour of the markings is sometimes earthy brown, sometimes dark olive brown, and some times purplish brown. In some eggs, the whole surface is covered with markings more or less uniformly; in others they are far more dense on the large end, and comparatively sparse elsewhere.

In length, these eggs vary from 20·8 mm. to 24·9 mm., and in breadth from 15·2 mm. to 18.8 mm.; but the average of twenty-nine eggs measured is reported to be 22·9 mm. by 16·7 mm.

Specimens in the collection :

One egg : Length : 21 mm.

Breadth : 16 mm.

Colour : Cream-coloured, with brownish blotches.

Family CAMPEHAGIDAE.

Pericrocotus flammeus (Forst).

(The Orange Minivet).

The Orange Minivet breeds during June and July on the Nilgiris. The nests are comparatively massive little cups placed on, or sometimes in, the forks of slender boughs. They are usually composed of small twigs and grasses and densely covered over on the outside with lichens, moss and cobwebs. The nest is so cleverly camouflaged that it appears as though it is part and parcel of the tree and looks more or less exactly like a lichen-covered branch. There appears to be no lining, and the eggs are laid directly on the fine little twigs which compose the body of the nest.

The nests measure externally from 3 to 3¼ inches in diameter and about 1½ inches deep, with an egg cavity about 2 inches in diameter and about ¾ inch in depth. Some, however, when placed in a fork are much deeper and narrower, say, externally 2½ inches in diameter and the same height ; the egg cavity is about 1¾ inch in diameter and 1¼ inch in depth.

The nest is generally placed in tall trees at a height of about 20 to 40 feet from the ground.

The egg has a pale greenish ground colour, and pretty thickly streaked and spotted, most thickly so at the large end, with pale yellowish brown and pale, rather dingy purple, the latter colour predominating. The shell of the egg is fine, but without gloss.

In some eggs, the ground colour is a delicate pale sea-green, or greenish white and it is rather sparsely spotted and speckled with pale yellowish brown. Sometimes the spots are reduced to only one or two purplish grey specks.

The eggs measure about 22.4 mm. to 22.9 mm. in length and from 17.0 mm. to 17.3 mm. in breadth.

Specimens in the collection :

Two eggs :

(i) Length : 20 mm.
Breadth : 11 mm.
Colour : Cream-coloured, with brownish dots.

(ii) Length : 22 mm.
Breadth : 12 mm.
Colour : Creamy white, with brownish spots.

Pericrocotus cinnamomeus peregrinus (Linnaeus).

(The Small Minivet).

The Small Minivet lays during the latter half of June (as soon as the rains set in), and throughout July and August. It breeds all over India and Burma.

The nest is small and neat and resembles the bark of the tree on which it is placed.

The nest is commonly placed in mango trees in the fork of a branch, generally at a considerable height from the ground. It is a small, moderately deep cup, with an internal cavity about 1.7 inches to 1.9 inches in diameter, and nearly an inch in depth. The sides of the nest are about 3/8 inch thick, and the thickness of the bottom of the nest varies according to the shape of the fork chosen, whether obtuse-or acute-angled. In the former case, the bottom of the nest is sometimes not more than 1/4 inch in depth. In the latter case, it is sometimes as much as an inch in thickness. It is composed of very fine, needle-ike twigs (with at times here and there a few feathers) carefully bound together externally

with cobwebs, and coated with small pieces of bark or dead leaves, or both, so that, looked at from below with the naked eye, it is impossible to distinguish it from one of the many little excrascences so common, especially on mango trees. There appears to be seldom any lining, a very little down an cobwebs forming the only bed for the eggs, and even this is often wanting. Sometimes a few tiny dead leaves or a little lichen is found incorporated in the nest, and occasionally, but rarely, fine grass stems take the place of very slender twigs.

The nest is cup-shaped, and is a compactly made structure, the exterior of which is sometimes composed of the very fine petioles of leaves, and with a thick coating all over of what looks like spiders' webs. Sometimes the nest is placed on tamarind trees, and attached to the web-like substance on the exterior here and there for better disguise, are attached the dry leaves of the tamarind tree ; the lining is of very fine grass. The outer diameter of the nest is about 2·2 inches, the inner 1·8 inches and the depth about 0.9 inches. Generally two or three eggs are laid. Since the nest is often fixed in between the delicate forks of branches at the extreme end of a slight side branch near the top of the tree, collecting the nests and eggs of this species is a hazardous feat.

The eggs are greenish white or of a greenish stone colour, thickly speckled with light purple or brownish red. Sometimes they are pale greenish white, sparingly speckled on the narrower half of the egg with brownish spots, but they have the posts on the broader half more dense, and forming at the end a more or less complete cap. Sometimes the eggs are pale bluish green, speckled and spotted, most densely at the large end, with two shades of dusky purple, the markings of the lighter shade appearing to underline those of the darker.

The eggs differ considerably in colouring, but the ground colour is usually greenish white. Sometimes the speckling is profuse and minute, and sometimes the specks are less numerous but larger. The eggs are of a rather broad, oval shape, and very blunt at both ends. The ground colour is a pale, delicate greenish white, and they are more or less richly marked with bright, slightly brownish red specks, spots and blotches which, always more numerous at the large end, have a tendency there to form a mottled irregular cap. In many specimens of eggs, besides these primary markings, a number of small, faint patches and blotches of pale inky purple are observable, almost exclusively at the large end. The eggs appear to be quite devoid of gloss.

The eggs vary in length from 15.2 mm. to 17.8 mm., and in breadth from 12.7 mm. to 14.2 mm., but the average appears to be nearly 17.0 mm. by 13.5 mm.

Specimens in the collection :

One nest :

Diameter : 50 mm.
Height : 45 mm.

Family PYCNONOTIDAE.

Pycnonotus cafer cafer Jerdon.

(= Molpastes cafer cafer).

(The Madras Red-vented Bulbul).

The Madras Red-vented Bulbul breeds in the plains country chiefly in June and July, although a few eggs may also be found in April, May and August. In the Nilgiris, the breeding season is from February to April, both months included.

The nest is usually built of dry grass stems, lined with fine roots and a few horse hairs neatly woven together. The nest is compact and rather massive; externally, it is composed of the stems of tiny plants among which are mingled a number of quite dead and skeleton leaves and a few blades of dry grass ; inside, rather coarse grass is tightly woven into a lining for the cavity, which is deep, being about 2 inches in depth and 3 inches in diameter. Sometimes a good deal of cobweb is applied here and there externally.

Usually four eggs are laid, but sometimes only three eggs have been found in the nests.

In shape, the eggs are typically rather long ovals, slightly compressed or pointed towards the small end. Some are a good deal pointed and elongated, a few are tolerably perfect broad ovals and abnormal shapes are not very uncommon. The ground colour is universally pinkish or reddish white (in old eggs which have been kept a long time a sort of dull French white) of which more or less is seen according to the extent of the markings. The markings take almost every conceivable form, defined and undefined specks, spots, blotches, streaks, smudges and cluds ; their combinations are as varied as their colours, which include every shade of red, brownish and purplish red.

Specimens in the collection :

One egg : Length : 22 mm.
Breadth : 16 mm.
Colour : Cream-coloured, with pinkish patches and spots.
Two nests : (i) Diameter : 105 mm.
Height : 65 mm.
(ii) Diameter : 91 mm.
Height : 60 mm.

Pycnonotus jocosus emeria Linnaeus.

[= Otocompsa emeria (Linnaeus).]

(The Bengal Red-Whiskered Bulbul).

The Bengal Red-Whiskered Bulbul breeds from March to the end of May. The nest is placed in any thick bush, clump of grass, or knot of creepers, sometimes in the immediate proximity of native villages, or in gardens of bungalows and sometimes quite away in the jungle. It is a typical bulbul nest, a broad, shallow saucer, compactly put together with twigs of herbaceous plants, among which, especially towards the base, a few dry leaves are incorporated, and lined with roots or fine grass. Exteriorly, a little cobweb is wound on to keep twigs and leaves firm and in their places. The nests are placed tolerably near the ground at heights varying from three to five feet. The nest is cup-shaped, and is usually formed of roots, twigs and grass loosely worked together, and over the exterior, to bind the mass together, dried or skeleton leaves, pieces of cloth, broad pieces of grass, and plantain-bark are fastened carelessly on by means of cobwebs and the silk from cocoons. The egg cavity is lined with fine roots.

There are usually not more than three eggs and sometimes only two.

The eggs are of the regular Bulbul type and vary much in colour, size and shape. Typically, they are rather a long oval, somewhat pointed at one end, and have a pinkish or reddish-white ground, with little or no gloss, and are thickly freckled, speckled streaked or blotched, as the case may be, with blood-red, brownish red or purplish red, etc., and here and there, chiefly towards the large end, exhibit, besides these primary markings tiny, underlying spots and clouds of pale, inky purple. Bold blotches of rich red and pale purple are more commonly seen in the eggs of this species than in those of *Molpastes levicotis* and *Molpastes leucogenys*, the eggs of which resemble those of this species very closley in all other respects.

The eggs vary in length from 20·3 mm to 22·9 mm. and in breadth from 17.8 mm. to 22.6 mm., but the average size of twenty-seven eggs measured is reported to be 21.1 mm. by 16.00 mm. nearly.

Specimens in collection :

Two eggs : (i) Length : 20 mm.
Breadth : 16 mm.
Colour : Cream-coloured, with elongated reddish patches and black dots.
(ii) Length : 22 mm.
Breadth : 16 mm.
Colour : Cream-coloured, with elongated reddish patches and streaks and black dots.
One nest : Diameter : 90 mm.
Height : 54 mm.

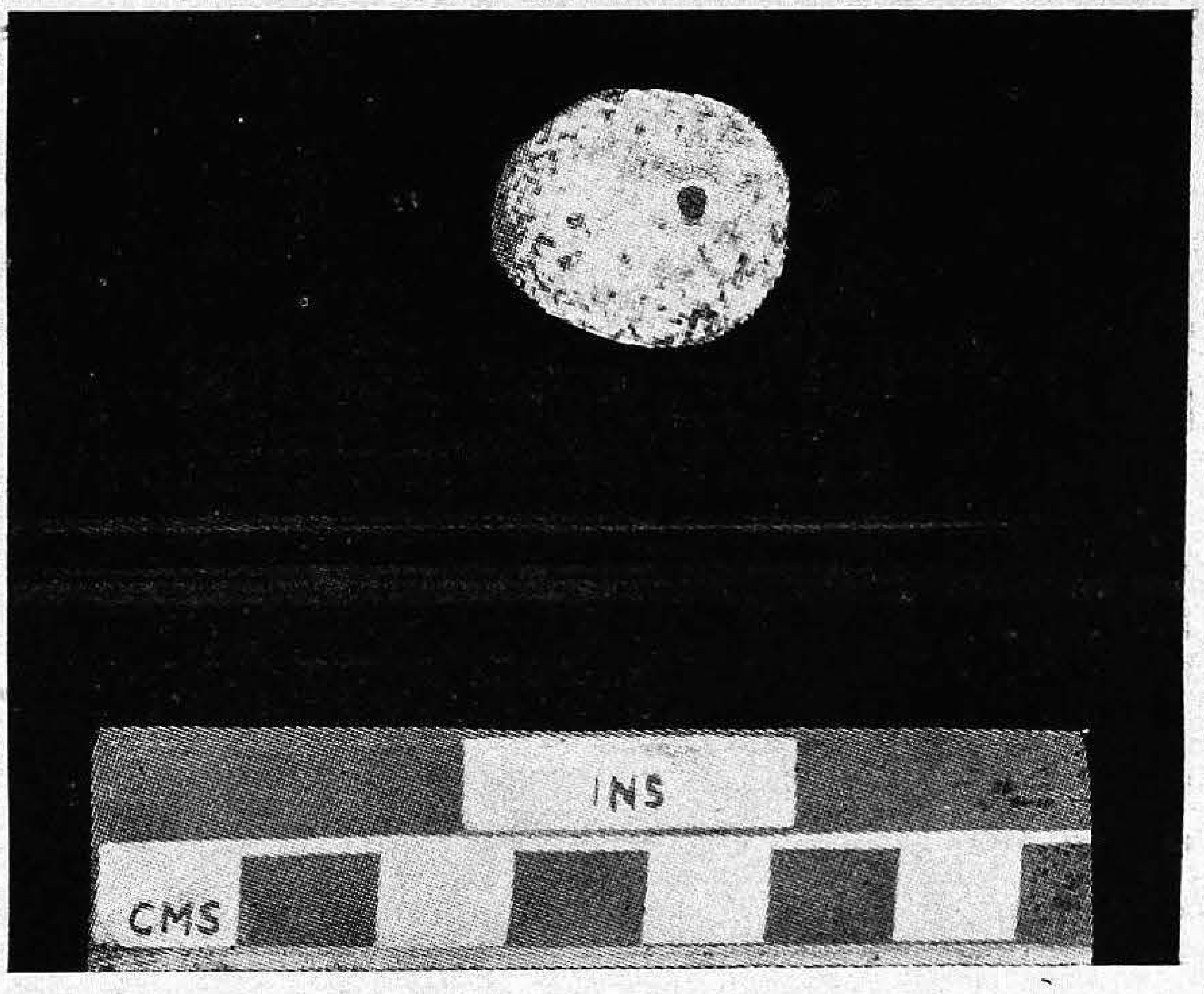

Figure 49. **Pycnonotus cafer cafer** (Jerdon)
(The Madras Red-vented Bulbul)

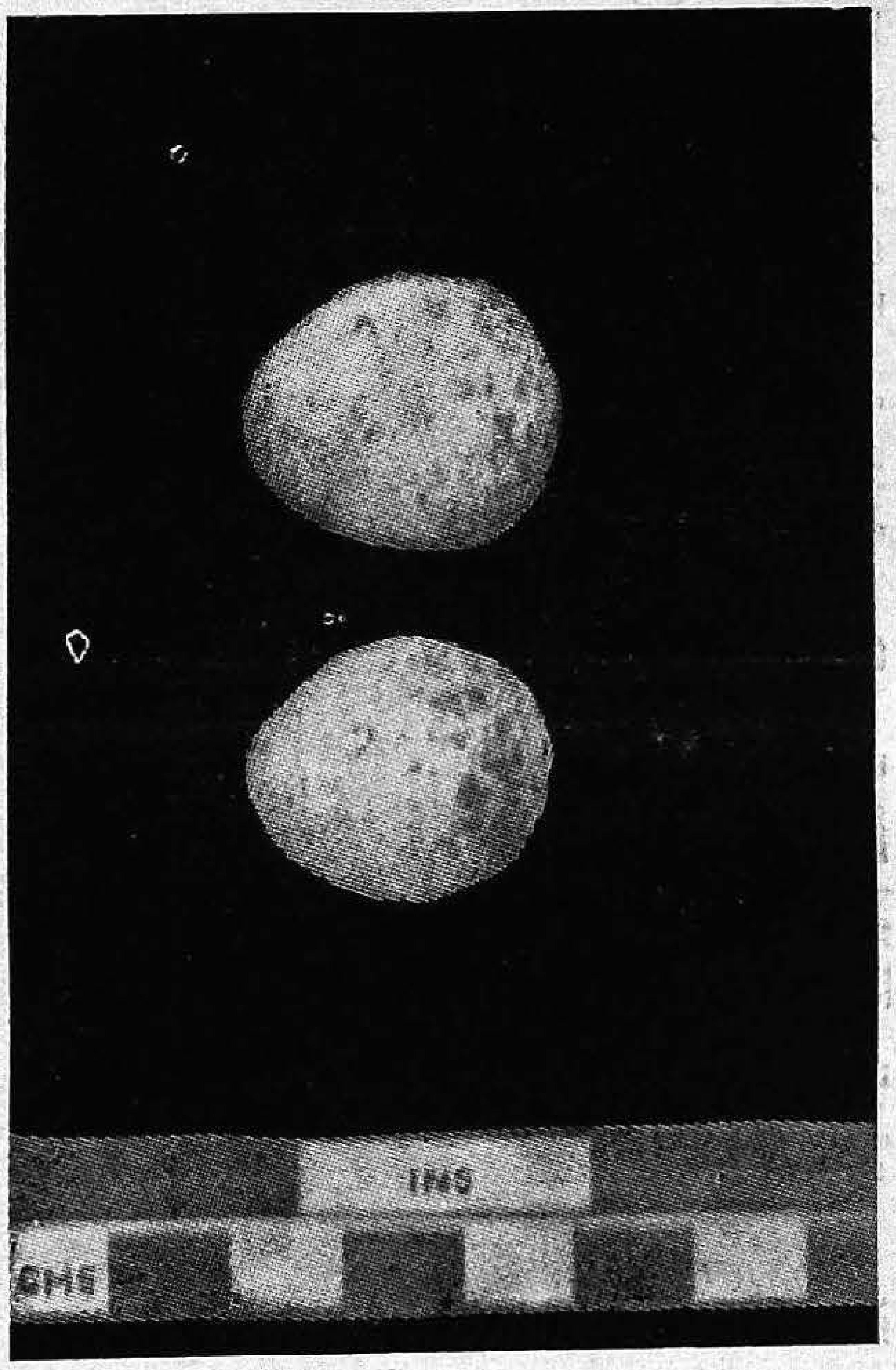

Figure 50. **Pycnonotus jocosus emeria** (Linnaeus).
(The Bengal Red-Whiskered Bulbul)

Pycnonotus jocosus fusicaudata (Gould).

(=Otocompsa emeria fusicaudata Gould).

(The Southern Red-Whiskered Bulbul).

The Southern Red-Whiskered Bulbul is found throughout the more hilly and more or less elevated tracts of the Peninsula, from Cape Comorin northwards as far a s Mount Abu in the West, and the Eastern Ghats, above Nellore, in the east.

The nests of this species resemble very much those of the *Otocompsa emeria* but they are somewhat neater and more substantial in structure. They differ a good deal in size and shape,as is usual with the nests of bulbuls. Some are rather broad and shallow,with egg cavities measuring 3¾ inches across, and perhaps one inch in depth, while others are deeper and more cup-shaped, the cavity measuring only about 2½ inches across and fully1½ inches in depth. They are comopsed in some cases almost wholly of grass roots, in others, of very fine twigs of the *furash* (*Tamarix furas*), in others again, of rather fine grass and all have a quantity of dead leaves or dry ferns worked into the bottom, and all are lined with either very fine grass, or very fine grass roots. The external diameter averages about 40 inches, but some stand fully 3 inches high, while others are not above two inches in height The incorporation of a quantity of dead leaves in the body of the nests, reminding one much of those of the English Nightingale, is characteristic of the Red whiskered Bulbul, and is scarcely to be met with in those of the White-cheeked or White-eared Bulbuls In the Nilgiris, they commence to lay in February. The nests are generally placed in Coffee bushes and low shrubs, as a rule in a fork, but they are also frequently found suspended between the twigs of a bush which had no fork. The nest is cup-shaped, rather loosely constructed outside, but closely and neatly finsihed inside. The outside is nearly always composed of fern leaves at the bottom, coarse grass and fibres above, and lined inside either with fine fibres or fine grass.

The normal number of eggs laid is two, but three or four eggs have also been found.

The eggs have a dull pinkish or reddish white ground, very thickly freckled, mottled and streaked all over with a rich red ; in most eggs the markings are blood-red, in others brick red, underneath which, when closely looked into, a small number of pale, inky purple spots are visible. In half the number of eggs the markings are much denser at the large end ; these eggs are as a rule larger and more brightly and intensely coloured than those of any of the other species of bulbuls.

The eggs vary in length from 20·8 mm. to 24·6 mm. and in breadth from 16·0 mm. to 18·0 mm; but the average size of thirty-six eggs measured was 22·9 mm by 17·8 mm.

Specimens in the collection :

One egg : Length : 22 mm.

Breadth : 17 mm.

Colour : Cream-coloured, with brownish spots.

Pycnonotus luteolus (Lesson).

(The White-browed Bulbul).

This Bulbul breeds from December to June, but April and May appear to be the favourite season.

The nest is a rather loose, straggling structure, exteriorly composed of fine twigs. The cavity which is hemispherical in shape, is carefully lined with fine grass stems Outside, it is very irregularly shaped and many of the twigs used are much too long and hang down several inches from the nest. But the outer framework is generally tied firmly with wool and a little cobweb to a live twig in the tree. No roots or hair are generally found in the composition of the nest.

Sometimes the nest is built in low bushes and fixed to thin live twigs in the bushes hardly two feet from the ground. The nest, in the form of a hemispherical cup, is just large enough to hold the body of this bird. It is made of thin twigs and neatly lined with coir. Generally two eggs are laid.

The eggs are quite unlike those of the Common bulbul from which they differ in shape, tone of colour and character of markings.

In shape, the eggs are decidedly elongated ovals. The shell is very fine and smooth, and moderately glossy. The ground is reddish white and this is profusely speckled and blotched(the blotches being chiefly confied, however, to a broad, irregular zone round the broader end) with a deep, red, but certainly not lake red, but nearer some shade of brownish vermilion. Besides these red markings sundry clouds and spots of a pale greyish lilac are intermingled in zone and one or two spots.

The eggs measure from 23·4 mm. to 24·6 mm. in length and from 15·7 mm to 16·0 mm. in breadth.

Specimens in the collection:

Two eggs : (i) Length : 25 mm.
Breadth : 17 mm.
Colour : Creamy, with pinkish patches and dots.
(ii) Length : 25 mm.
Breadth : 17 mm.
Colour : Creamy, with pinkish patches and dots.

Hypsipetes madagascariensis ganeesa Sykes.

(The Southern Indian Black Bulbul.)

This species breeds from April to about the middle of June. The nest is generally placed from 12 to 20 feet, in some dense clump of leaves. Favourite sites are the bunches of parasitic plants with which nearly every Acacia tree is covered. The nest is composed exteriorly of moss, dry leaves and roots, and lined with roots and fibres; the normal number of eggs is two; they are white with claret-coloured and purplish spots.

The nest somewhat resembles that of the Red-cheeked Bulbuls. The nest usually consists of a wisp of dry grass and dead leaves, with the dead leaves greatly predominating exteriorly, twisted into a shallow cup about 4 to 5 inches in diameter externally, and with a shallow depression fairly neatly lined with finer grass stems measuring about three inches across and perhaps an inch in depth. The bottom of the nest is almost exclusively composed of dead leaves, while even in the sides externally. little but these are visible, only a few grass stems crossing in and out here and there, sufficiently to keep the leaves in their places. The nest is cup-shaped and neatly and firmly, made. Outside, the nest is chiefly composed as a rule, of green moss, grass stalks and fibres while inside it is lined with fine stalks and hair. The cavity is from 2·5 to 3 inches in diameter and about half that in depth.

In the Nilgiris , in South India, it breeds in lofty trees, building a shallow, cup-shaped nest, and placed at a height of from 20 to 60 feet from the ground. It breeds during March, April, May and part of June all over the Nilgiris. The nests are all constructed of dry stems of the wild forget-me-not, moss, dry leaves and roots, lined with roots and fibres.

The normal number of eggs laid is two, but occasionally three eggs have been found. In the Nilgiris, the nests are mostly found in Rhododendron trees.

The eggs of this species very closely resemble those of the closely allied Himalayan Black Bulbul, *Hypsipetes psaroides*. The eggs are of course of the Bulbul type, but in form they are typically much more elongated and conical than true bulbuls. The ground colour varies from white to a delicate pink. The markings consist of different shades of deep red and pale washed out purple. In some eggs, the markings are bold, large and blotchey, in others

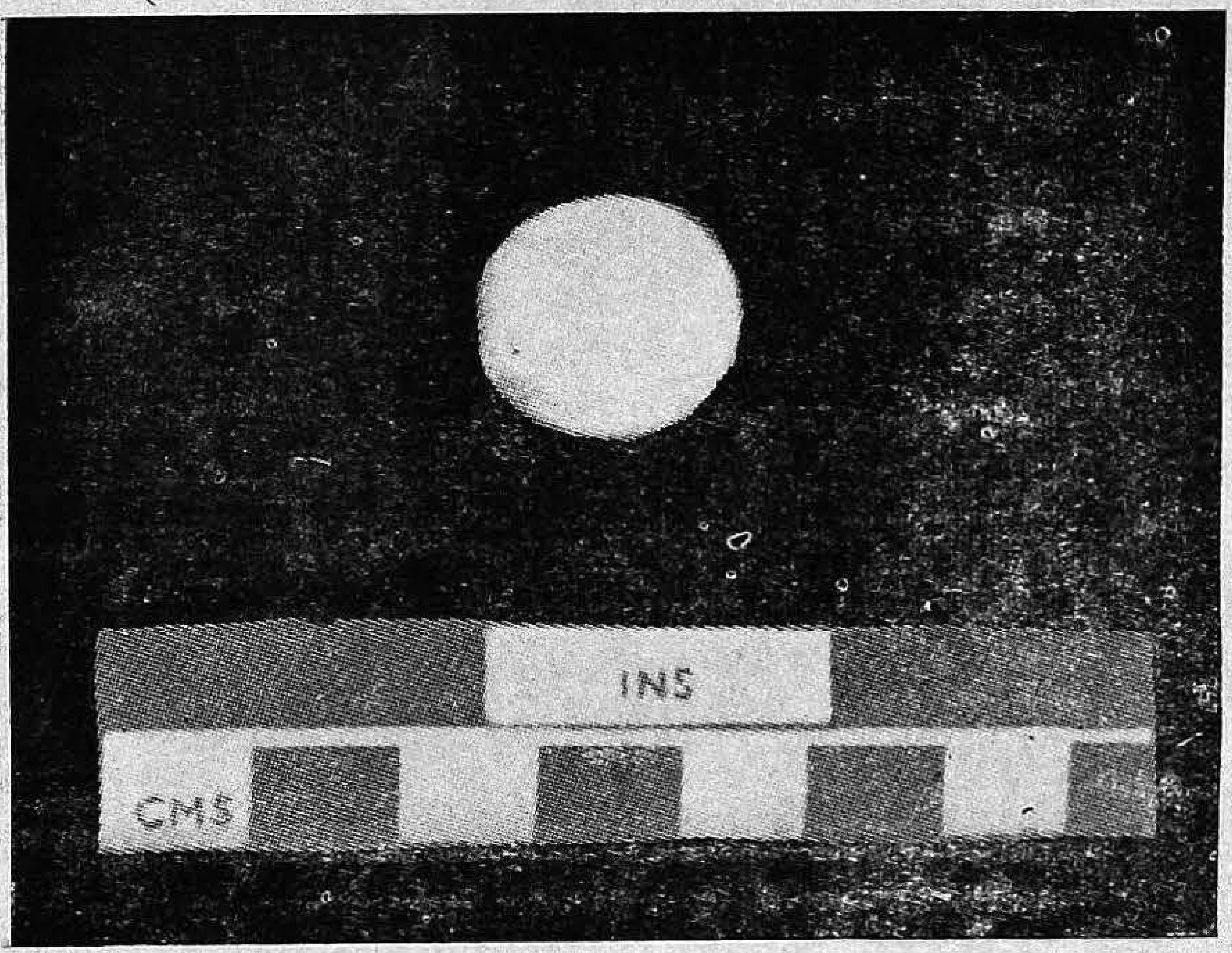

Figure 51. **Pycnonotus jocosus fusicaudata** (Gould)
(The Southern Red-Whiskered Bulbul)

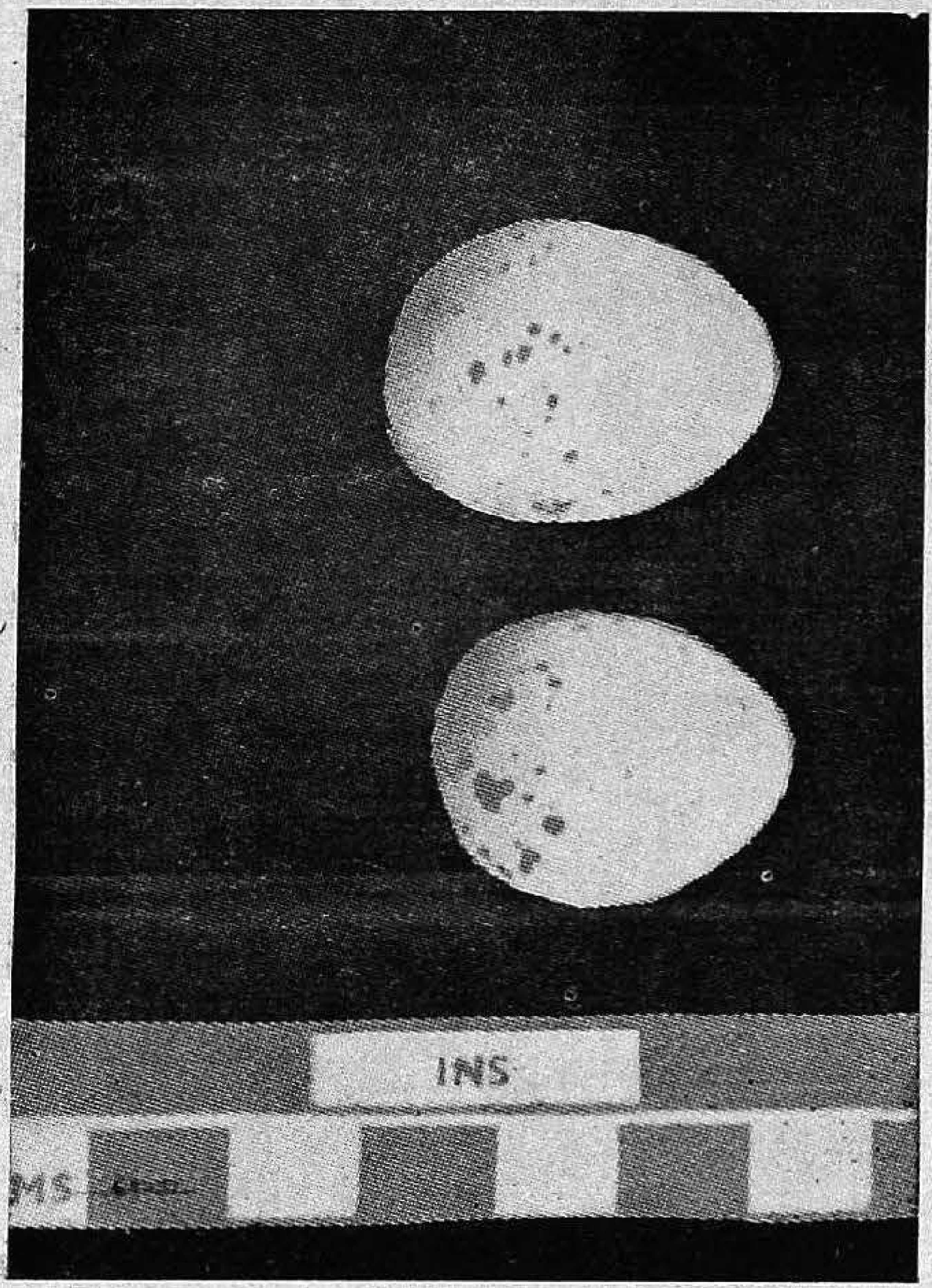

Figure 52. **Pycnonotus luteolus** (Lesson)
(The White-browed Bulbul)

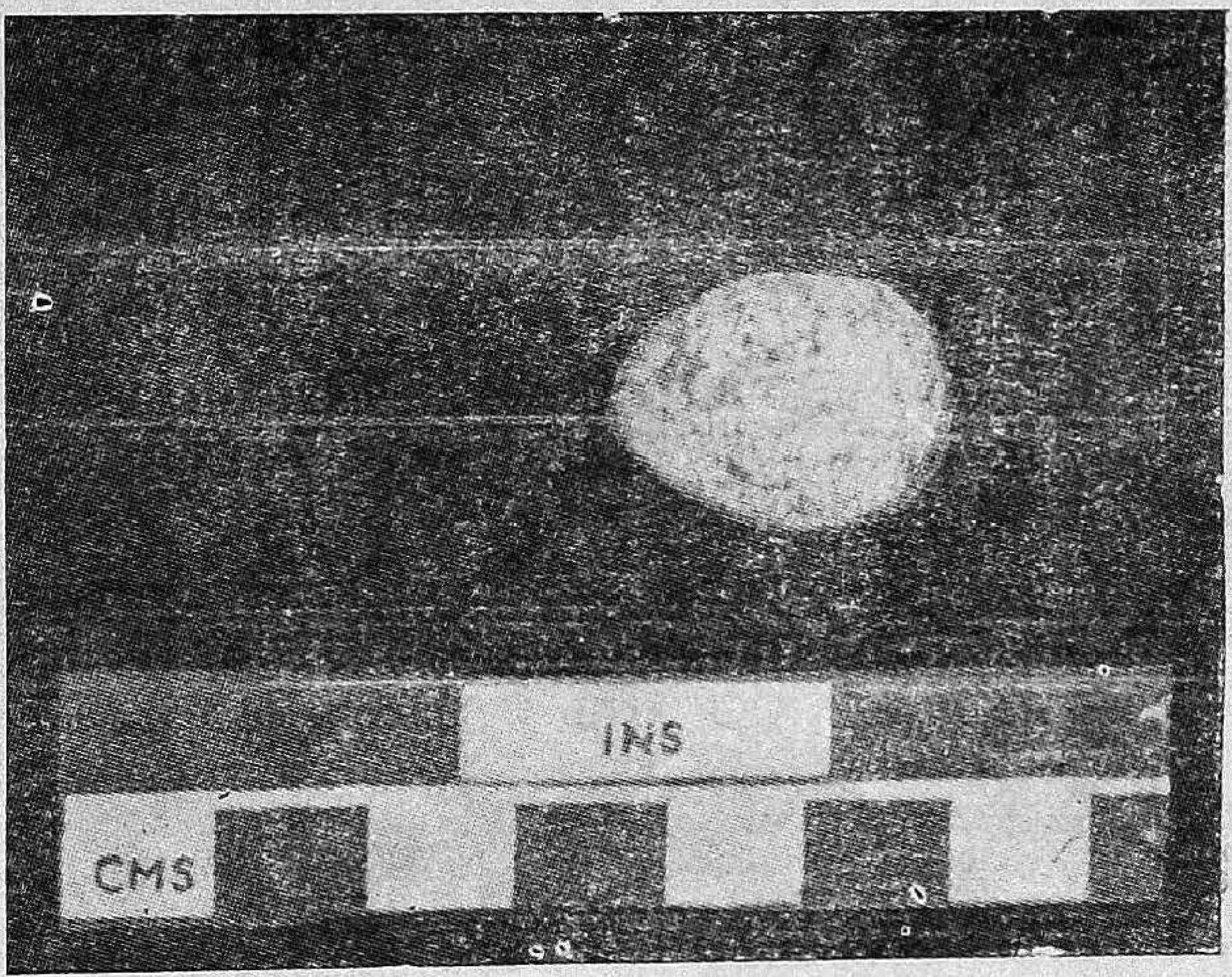

Figure 53. **Hypsipetes madagacariensis ganeesa** Sykes
(The Southern Indian Black Bulbul)

minute and speckly ; and in both forms there is a tendency to confluence towards the large end, where there is commonly a more or less perfect, but irregular zone. The eggs, though smooth and satiny, have commonly little or no gloss, and, considering their size, are very delicate and fragile.

The eggs vary in length from 25·4 mm. to 29·7 mm., and in breadth from 17·8 mm. to 20·3 mm.

Specimens in the collection:

Two eggs : (*i*) Length : 27 mm.
Breadth : 21 mm.
Colour : White, with dark reddish and blackish patches, and minutely speckled with pinkish and greyish dots.

Family IRENIDAE

Aegithina tiphia (Linnaeus).

(The Common Iora).

The Common Iora breeds in different localities from May to September.

The birds usually build their nests on the upper surface of a horizontal bough, at a height of from 10 to 25 feet from the ground. Sometimes, when the bough is more or less slanting, the nest assumes somewhat more of a pocket shape. Occasionally it is built between three or four slender twigs ,forming an upright fork ; but this is quite exceptional.

The nest is typically deep, cup-shaped, very neatly made with grass, various fibres, hairs and spiders ' webs. The egg cavity measures about two inches in diameter and varies from an inch to 1¼ inch in depth ; the walls of the nest composed of vegetable fibres and varying in different specimens from only one-eighth to three-eighths of an inch in thickness, are throughout thickly coated externally with cobwebs, by which also the nest is firmly attached to the branch on which it is seated as well as to any twig springing from that branch. Interiorly they are more or less neatly lined with very fine grass stems. The bottom of the nest in its thinnest part is rarely more than one-eighth of an inch in thickness, but the lateral portions of the bottom of the nest are a great deal thicker, being sometimes more than half an inch in thickness.

The eggs are normally three in number but at times, only two are found. In shape, the eggs are moderately broad ovals, slightly pointed towards one end. They vary, however, a good deal, some being much more elongated than others. They are almost entirely devoid of gloss. The ground colour is generally greyish white, but some have creamy and some have a salmon tinge. Typically, they have numerous long, streaky pale brown or reddish brown blotches, chiefly confined to the large, end where they often seem to spring from an irregular imperfect zone of the same colour. The colour of the blotches varies a great deal. In some eggs it is a pale greyish or purplish brown, in others decidedly reddish, or even well, marked and somewhat yellowish brown. Some pale, purplish streaks and clouds generally underlie the brown blotches where they are thickest, and there form a kind of nimbus. In some eggs, the markings are confined to a narrow, imperfect zone of pale purplish specks or very tiny blotches, round the larger end. The peculiar, streaky, longitudinal character of the markings, almost wholly confined to the large end, best distinguishes the eggs of the Ioras from those of any other Indian bird with which they are likely to be confounded.

The eggs vary in length from 16·0 mm. to 19·3 mm., and in breadth from 13·0 mm. to 14·5 mm., but the average size of forty-seven eggs measured is 17·5 mm. by a little more than 13·7 mm.

Specimens in the collection.

One egg : Length : 19 mm.
Breadth : 15 mm.
Colour : Cream-coloured, with brownish spots.

In addition to the above-mentioned isolated eggs, there is one nest containing two eggs. the measurements of which are furnished below.

Two eggs :(i) Length : 19 mm.
Breadth : 14 mm.
Colour : White with brownish spots.
(ii) Length : 19 mm.
Breadth : 14 mm.
Colour : White, with brownish patches.

Nest : Diameter : 59 mm.
Height : 58 mm.

Family LANIIDAE

Lanius vittatus Linnaeus.

(The Bay-backed Shrike).

The Bay-backed Shrike breeds throughout the plains of India and in the Sub-Himalayan Ranges up to the elevation of fully 4,000 feet. The laying season lasts from April to September, but the great majority of eggs are found during the latter half of June and July.

The nests are neat, compactly and solidly built cups, the cavities being deep and rather more than hemispherical, from 2·25 inches to fully 3·5 inches in diameter, and from 1·5 inches to 2 inches in depth. The nest walls vary from 0·5 inch to 1·25 inches in thickness.

The compostion of the nest is varied. The nest is generally compactly woven of grass stems and a few fine twigs, but with more or less of wool, rags, cotton or feathers incorporated. Sometimes the nest is composed almost entirely of cobweb, with a few soft feathers, wool, strings, rags and a few pieces of very fine twigs compactly woven. The interior is sometimes lined with fine straw and fibrous roots. The nest is rather deep, with a nearly hemispherical cavity. The nest is very compactly and firmly woven of fine grass, rags, feathers, soft twine, wool and a few fine twigs, the whole being entwined exteriorly with lots of cobwebs, and the interior cavity about 1¾ inch deep by 2¼ inches in diameter, neatly lined with very fine grass, one or two horsehairs, shreds of string and one or two soft feathers.

In shape the nest is circular and for the exterior framework thorny twigs, old rags, hemp, thread-pieces and coarse grass are used to a larger or less extent, and compactly worked together. The egg-cavity is deep and cup-shaped, lined with fine grass and thin pieces of rag or cotton are sometimes worked up with the former. The nest is usually placed in forks of thorny bushes and trees.

The eggs of this species of Shrike resemble those of the larger species of shrikes. Five to six eggs are the normal number of eggs. In colour, they are a light greenish white, with blotches and spots generally of a light, but sometimes of a darker, reddish brown. The spots and blotches vary in much size, and they are mostly confined to the broad end of the eggs. But there is considerable variety in the colour of the eggs. They have a dull, pale ground, not white, and yet it is difficult to say what colour it is that tinges it ; in some eggs it is a yellowish stone colour, but in others it is greenish, and in some grey ; near the middle, towards the large end, there is a broad and conspicuous, but broken and irregular zone of feeble, more or less confluent spots and small blotches of pale yellowish brown and very pale, washed out purple. There are a few faint specks and spots of the same colour here and there about the rest of the egg. In some eggs, the zone is quite in the middle, and in others close round the large end. In some, the colours of the markings are clear and bright, in others they are faint and feeble. In size, too, the eggs vary a good deal. The pale creamy and pale brownish stone-coloured grounds predominate more amongst the eggs of this

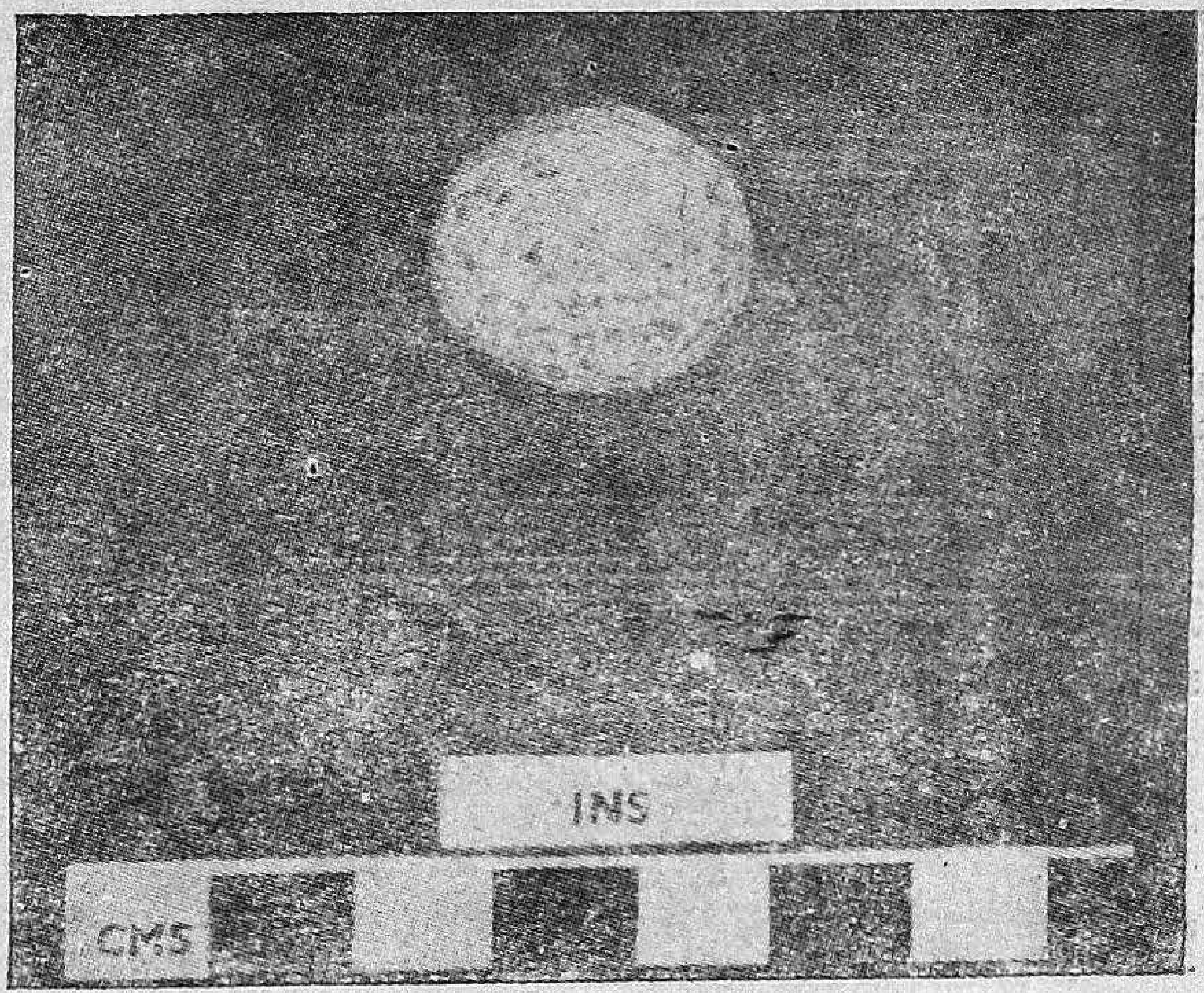

Figure 54. **Aegithina tiphia** (Linnaeus)
(The Common Iora : Egg)

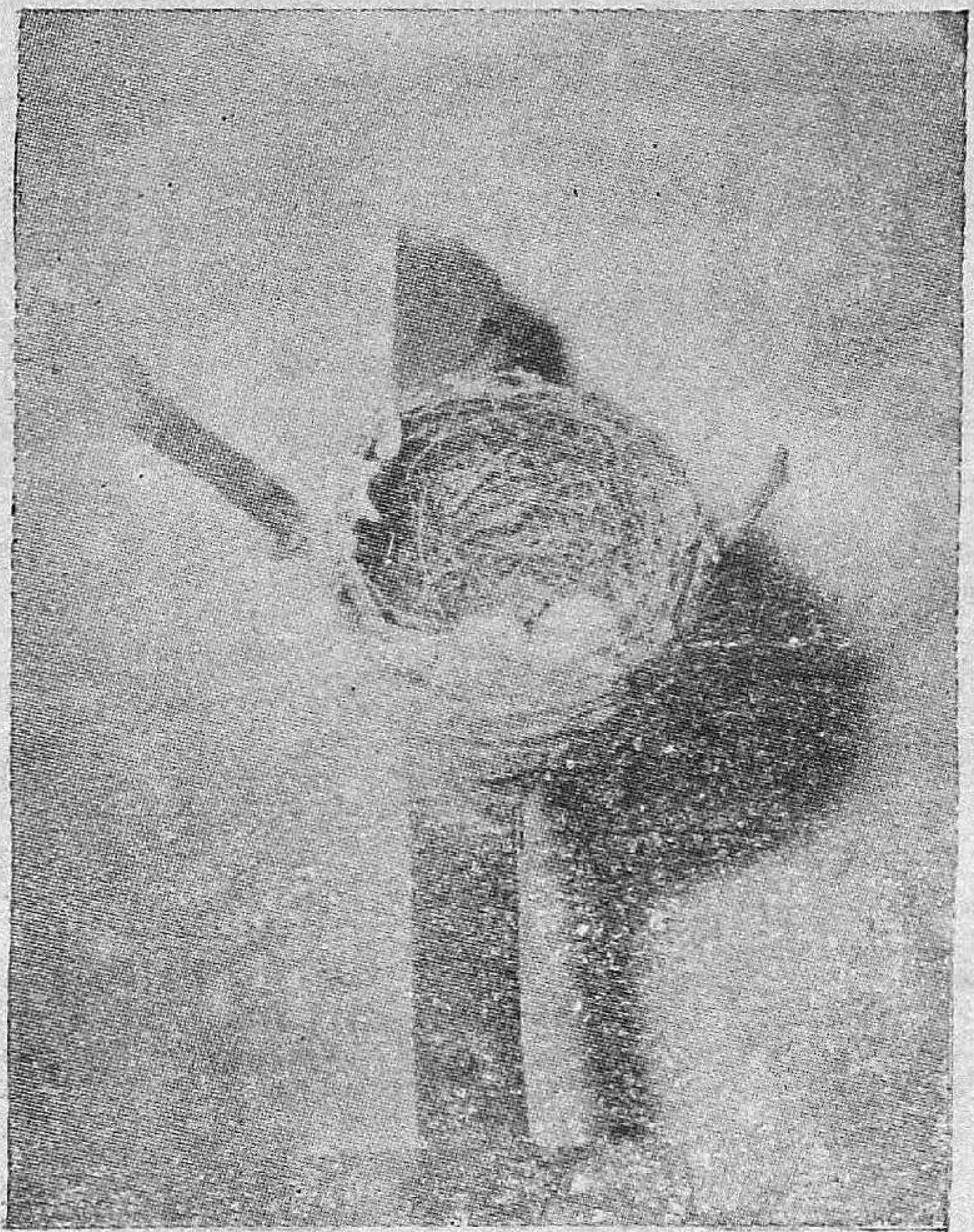

Figure 55. **Aegithina tiphia** (Linnaeus)
(The Common Iora : Nest with eggs)

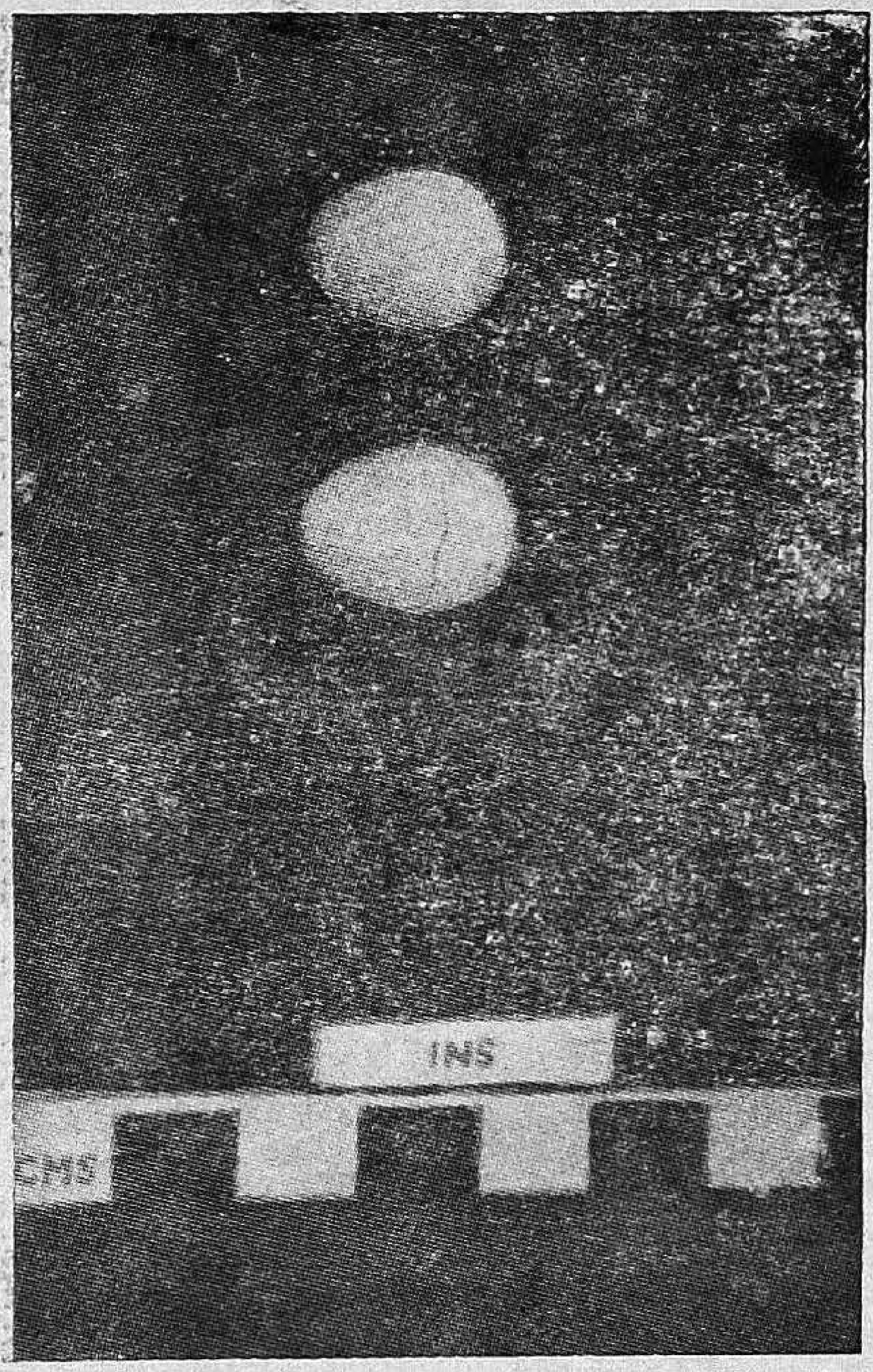

Figure 56. **Lanius vittatus** Linnaeus
(The Bay-backed Shrike)

species than in those of the other two species of Shrikes, namely, *L.lahtora* or *L.erythronotus*. The markings are also, as a rule, more minute and less well defined, whereas in the eggs of *L. lahtora* and *L. erythronotus* the blotches are bold and sharp.

The eggs of *Lanius vittatus* vary in length from 19·1 mm. to 24·1 mm., and in breadth from 15·7 mm. to 18·0 mm.; but the average size of fortyfive eggs measured was 21·1 mm. by 16.18 mm. nearly.

Specimens in the collection :

Three eggs. (i) Length : 22 mm.

Breadth : 17 mm.

Colour : White, with brown and black patches, denser towards the broad end.

(ii) Length : 21 mm.

Breadth : 17 mm.

Colour : White, with brown and black markings, denser towards the broad end.

(iii) Length : 21 mm.

Breadth : 16 mm.

Colour : White, with brown and black markings, denser towards broad end.

Lanius excubitor lahtora (Sykes).

(The Indian Grey Shrike.)

The Indian Grey Shrike lays from January to August, and occasionally up to October, but the majority of the eggs are obtained during March or April.

The nest is generally very compact, heavy, deep and cup-shaped and usually placed at heights from 4 to 10 or 12 feet from the ground in a fork, towards the centres of some densely growing thorny bush, or moderate-sized three, most frequently Acacia or plum trees As a rule it builds a new nest every year, but it not infrequently only repairs the old one that has served in the previous season, and even at times takes possession of those of other species.

The nest is composed of varied materials. Sometimes it is made entirely of grass-roots with much sheep's wool, lined with hair and feathers, or solidly woven of silky vegetable fibre, mostly that of putsum (*Hibiscus cannabinus*) in which are incorporated little pieces of rag and strips of the bark of the wild plum (*Zizyphus jujuba*) ; but most commonly, thorny twigs, coarse grass and grass-roots form the body of the nest, while the cavity is lined with feathers, hair, soft grass and similar material.

Generally the nests are vey compact and solid 6 or 7 inches in diameter, and the egg cavity, which is deep and cup-shaped about 3 to 5 inches in diameter and 2 to 2½ inches in depth. The nest in structure is neat and compact and generally well fixed into the forks of an off-shooting branch. In shape it is circular varying from 5 to 7½ inches in diameter, and form 1½ to 3½ inches in thickness ; thorn, twigs, coarse grass, grass-roots, old rags, etc., form the outer materials of the nest and closely interwoven fine grass and roots the border rim. The egg cavity is deeply cup-shaped and lined with fine grass and khus-khus exceptionally shreds of cloth are interwoven with khus-khus and grass.

The normal number of eggs is five, although at times six have been obtained in one nest.

Both this species and *Lantus erythronotus* often lay in old nests in which they first carefully repair the egg-cavity with new materials. It is not only, however, in old nests of their own species that these birds make a home in the breeding season. At times they take possession of old nests belonging to other species also.

Three to five eggs are generally contained in each nest. Five appears to be the largest number of eggs found in any nest.

Typically, the eggs are of a broad, oval shape, more or less pointed towards one end and of a delicate chalky bluish white or greenish white ground colour pretty thickly blotched spoted with various shades of brown and purple markings, which are most numerous towards the large end where they form a more or less ill defined zone or irregular mottled cap. However, the markings vary greatly, in shape size, colour, extent and intensity. In some eggs, the ground colour is a delicate pale sea green ; in some it is stone colour in others creamy and in a few it has almost a pink tinge. The markings, commonly somewhat dull and ill defined are occasionally bold and bright, and in colour they vary through every shade of yellowish, reddish, olive and purplish brown, while sub-surface-looking pale purple clouds are intermingled with darker and more well defined markings. In some eggs the markings may be almost exclusively confined to a broad very irregular zone of bold blotches near the large end. In others the whole surface is more or less thickly dotted with blotches and spots, so closely crowded towards the large end as almost wholly to obscure the ground colour there As a rule the markings are in the form of irregular blotches of greater or less extent, but occasionally the majority of markings may be in the form of spots and specks. In some eggs the purple cloudings greatly predominate while in others there is scarcely any trace of them. Some eggs are comparatively long and narrow, while some are pyriform and blunt at both ends.

The eggs vary in length from 22·9 mm. to 29·7 mm., and in breadth from 19·1 mm. to 2·11 mm. ; but the average size of more than fifty eggs is 26·2 mm. by 20·1 mm.

Specimens in the collection :

One egg : Length : 28 mm.

Breadth : 22 mm.

Colour : White, with brownish and greyish spots.

Lanius scach erythronotus (Vigors).

(The Rufous-backed Shrike).

The Rufous-backed Shrike lays from March to August the first half of this period being that in which the majority of these birds lay in the Himalayas which they ascend to elevations of 6,000 feet and the latter half being that in which most eggs may be found throughout the whole period mentioned above.

The nests of this species are almost invariably found placed on forks of trees or of their branches at no great height from the ground. The maximum height appears to be 15 feet from the ground. By preference they build in thorny trees the various species of Acacia so common throughout the plains of India being apparently their favourite nesting haunts. Internally the nest is always in the shape of a deep cup from 3 to 3¼ inches in diameter and from 1¾ to 2⅛ inches deep. The cavity is always circular and regular and lined with fine grass. Externally the nests vary greatly ; they are always massive but some are compact and of moderate dimensions externally, say not exceeding, 5½ inches in diameter while others are loose and straggling with a diameter of fully 8 inches. Grass stems fine twigs, cotton-wool, old rags, dead leaves, pieces of snake's skin and all sorts of odds and ends are incorporated in the structure, which is generally more or less strongly bound together by fine, tow-like vegetable fibre. Some nests indeed are so closely put together that they might almost be rolled about without injury, while others again are so loose that it is scarcely possible to move them from the fork in which they are wedged without pulling them to pieces. The interior is neatly lined with dry grass and horsehair.

The eggs are normally five in number and are of a pale greenish-white colour, spotted all over with olivaceous, inky brown spots and specks, increasing in size and forming a zone at the large end. They vary much in shape, some being pyriform, and others blunt and similar in shape at both ends. The eggs resemble very much those of *L. lahtora* but smaller and have less green colour, having commonly more of the pale ereany or pinky stone colour than in the case of *L. lahtora*.

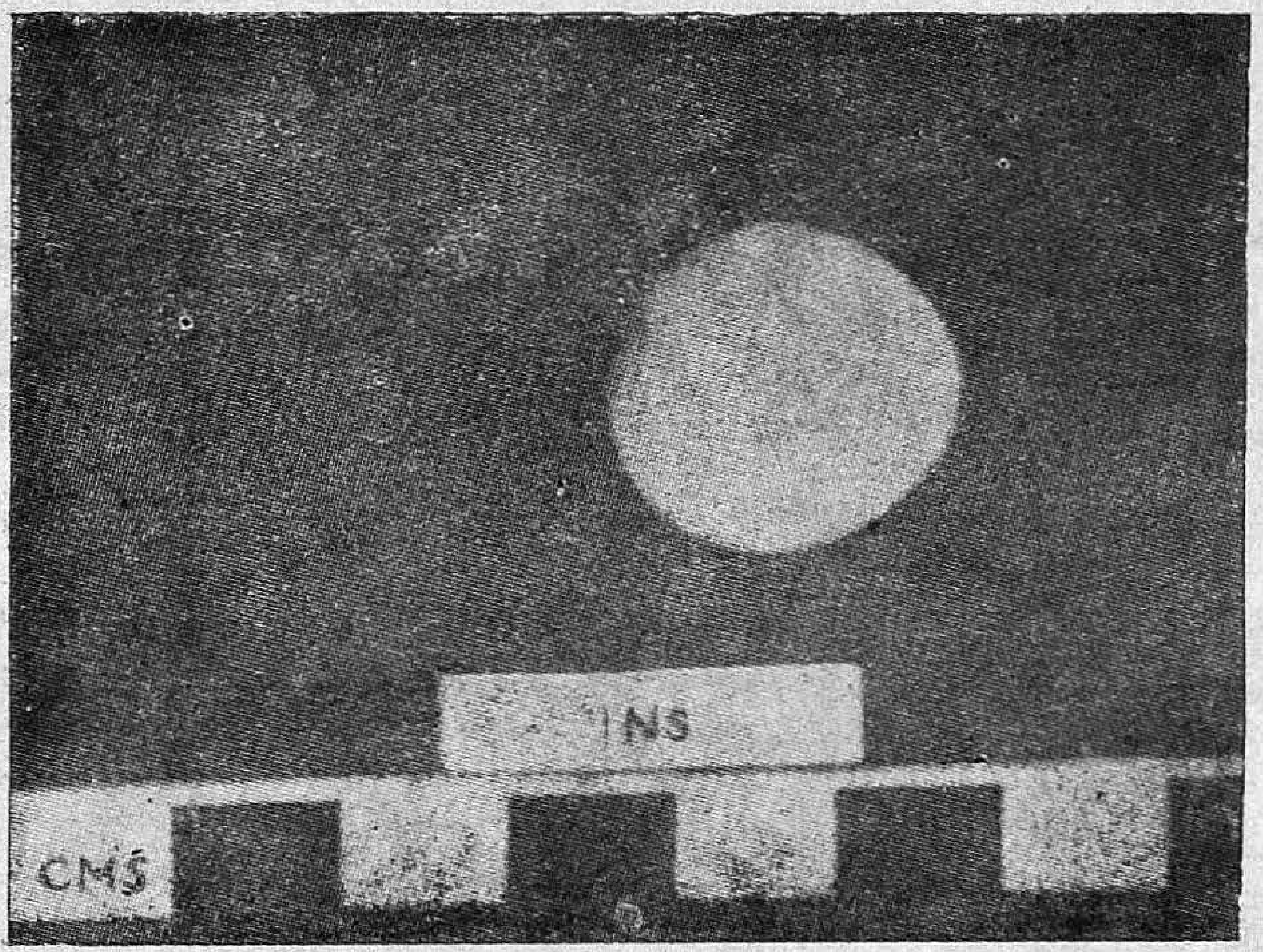

Figure 57. **Lanius excubitor lahtora** (Sykes)
(The Indian Grey Shrike)

In size, the eggs of *L. schach erythronotus* appear to approach those of the English Red-back Shrike, though they average perhaps somewhat smaller.

The eggs vary in length from 21·6 mm. to 26·7 mm., and in breadth from 16·5 mm. to 19·6 mm, but the average size of more than one hundred eggs measured is 23·4 mm. by 18·0 mm.

Specimens in the collection :

One egg : Length : 23 mm.
Breadth : 20 mm.
Colour : White, with brownish and greyish brown spots.

Family MUSCICAPIDAE

Sub-family TURDINAE

Turdus merula simillimus (Jerdon).

(The Nilgiri Blackbird.)

Nests of this species are found in the Nigiris from March to May. Several nests have been found in Coffee bushes and on Rhododendron trees.

In shape it is hemispherical and open at the top. There is always a foundation of mud, and a superstructure of thin twigs or coarse fibres, but sometimes the nest has scarcely any lining. One to three eggs have been found normally in these nests.

The nests of this species are always apparently very massive structures containing an inner skeleton of mud, completely hidden from sight by an exterior coating of moss or lichen, or fine or coarse grass roots, and an interior lining of fine grass roots. The bird appears to lay a light foundation of dead leaves, lichen or fern, and on this it builds a more or less deep cup, twisting together as a skeleton a few coarse grass roots, and then thickly plastering it with mud or wet mould. The cup thus made is often about 4¼ inches in diameter and 2½ inches deep. It is then covered externally to the thickness of one or two inches with grass or other roots, dry slender ferns, soft green moss, or masses of tree lichen. The interior of the cup is first lined with rather coarse roots, and then finished off with fine ones. No particle of the clay skeleton is visible in the finsihed nest which may average about 7 inches in diameter externally, stands about 4 inches high and has an egg cavity some 3¼ inches in diameter by 2 inches deep.

Owing to the different materials used in different localities for the external coating of the nests, these vary much in appearance. But some of them coated entirely with moss or lichen are very pretty structures.

The nests of this species are very common at Ootacamund and its vicinity. During April and the earlier part of May, almost every thick shrub contains a nest of this species placed in a fork, generally about 12 or 14 feet from the ground. It is a large and very solid, structure, composed internally of bits of stick, dead leaves, roots and moss, within which is a tolerably thick stratum of clay, and within this again fine grass and moss roots. The eggs are normally four, sometimes five in number, and very variable both as regards colour and form, but the ground colour is generally a dingy blusih green, thickly mottled and freckled with brownish red.

The eggs are very similar to many varieties of those of the European Blackbird. In shape, they are commonly a broad oval, pointed towards one end. But the eggs are somewhat elongated and often perfectly oval, the smaller end being rounded and obtuse. The ground colour varies somewhat, being sometimes of a beautiful bright, blue-green and sometimes of a dull olive-green, and various intermediate shades also occur.

They are richly speckled, mottled and streaked, and at times even boldly blotched with brighter and duller, deeper and lighter shades of brownish red, not infrequently underlaid by faint spots and clouds of purplish pink or grey. The markings vary a good deal in extent and frequency, but in the majority of the eggs, form a more or less conspicuous confluent cup at the large end. In some eggs, all the markings are very fine and minute, appearing as if laid on with a very fine-pointed brush ; in others, they are coarse and streaky, and occasionally bold, blotchy and well defined. The eggs have usually a slight gloss, and some specimens are highly glossy. As already mentioned, in some specimens, secondary markings in the form of small, purple clouds and spots, appear to underlie the red-brown blotches.

The eggs vary in length from 27·9 mm. to 33·0 mm., and in breadth from 20·8 mm. to 23·6 mm. ; but the average of thrity-five eggs measured was 29·7 mm. by 21·8 mm.

Specimens in the collection ,

One egg : Length : 30 mm.
Breadth : 21 mm.
Colour : Cream-coloured, with brownish patches and dots.

One nest : Diameter : 145 mm.
Height : 83 mm.

Garrulax cachinnans (Jerdon).

[**Trachalopterum cachinnans** (Jerdon).]

(The Nilgiri Laughing Thrush.)

The Nilgiri Laughing Thrush breeds throughout the more elevated portions of the mountains of the Nilgiris from February to the beginning of June.

The nest is externally a rather coarse and clumsy structure composed of coarse grass roots, dead and skeleton leaves, small twigs, a little lichen and a quantity of moss. The egg cavity is, however, very regularly shaped, and neatly lined with very fine grass stems and a little, fine, tow-like vegetable fibre. It is a deep cup.measuring 2½ inches in diameter and fully 3¾ inches in depth. Externally, the nest is about 5½ inches in diameter, and nearly 6 inches in height, but the egg cavity is only about 2½inches in diameter and about 2¼ to 3¾ inches in depth. The Laughing Thrush generally selects the forked branches of a thick bush, and commences its nest with a large quantity of moss, after which there is a lining of fine grass and roots. The inside of the nest is perfectly round, and rarely contains more than two eggs.

The eggs are of a beatutiful greenish-blue colour, with a few large and small brown blotches and streaks, mostly at the large end. The eggs are moderately broad ovals, somewhat pointed towards one end, larger than the average eggs of *Garrulax lineatum* and about the same size as large specimens of the eggs of *Crateropus canorus* and *Argya malcolmi*. The ground colour is of a delicate pale blue, and towards the large end, and sometimes over the whole surface, they are speckled, spotted and blotched, but only sparingly, with brownish red and blackish brown, and amongst these markings, a few cloudy streaks and spots of dull faint reddish purple are noticed. The eggs do not have much gloss.

There are some variations. More or less pyriform varieties are common. In some eggs the markings are almost entirely wanting, there being only a very faint brownish pink freckling at the large end ; and in many eggs, even some that are profusly spotted all over the markings consist only of darker or lighter brownsih pink shades. Occasionally a few, almost black, twisted lines are intermingled with the other markings, and in these cases the lines are frequently surrounded by a reddish purple nimbus.

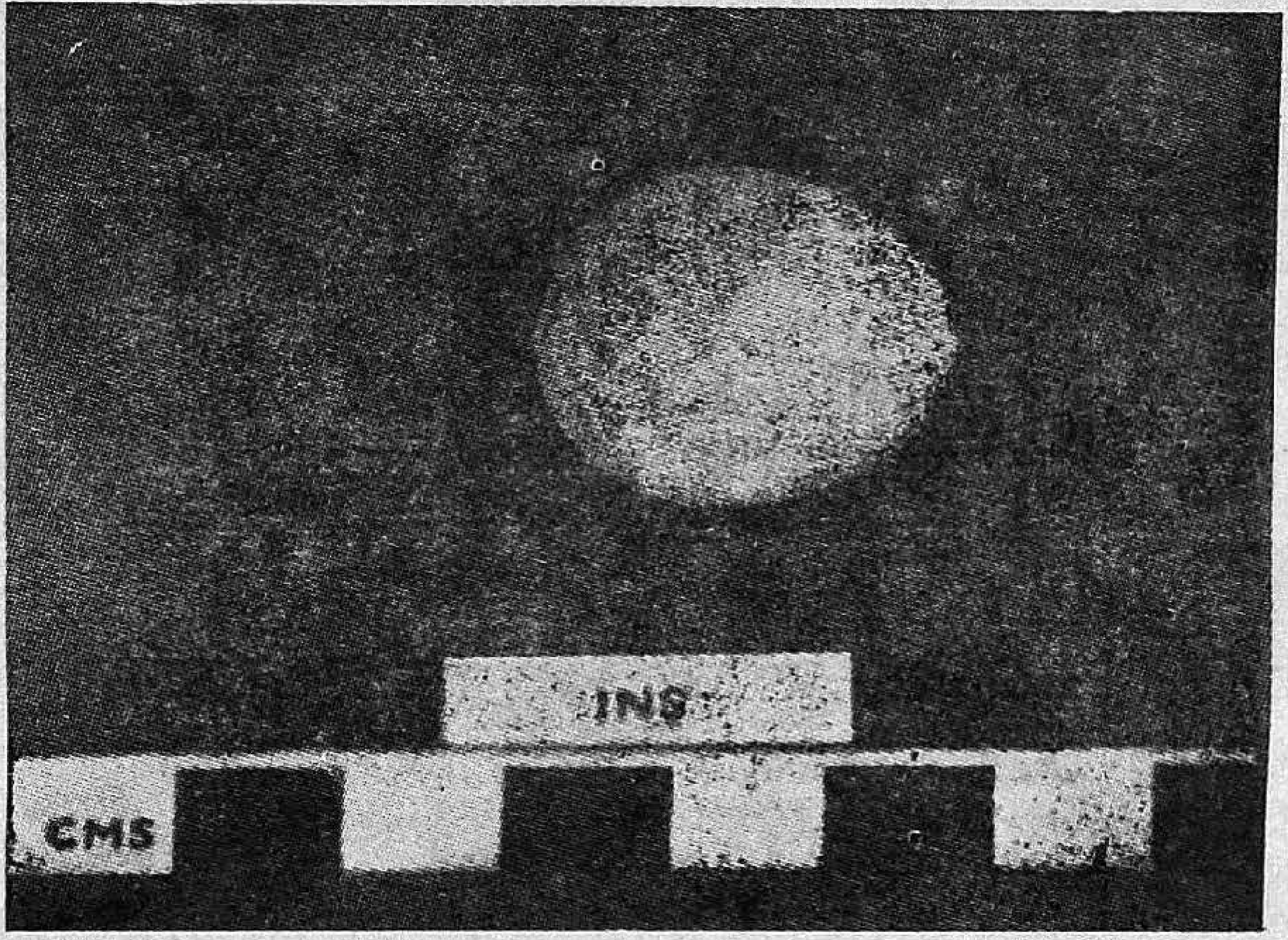

Figure 58. **Turdus merula simillimus** (Jerdon)
(The Nilgiri Blackbird : Egg)

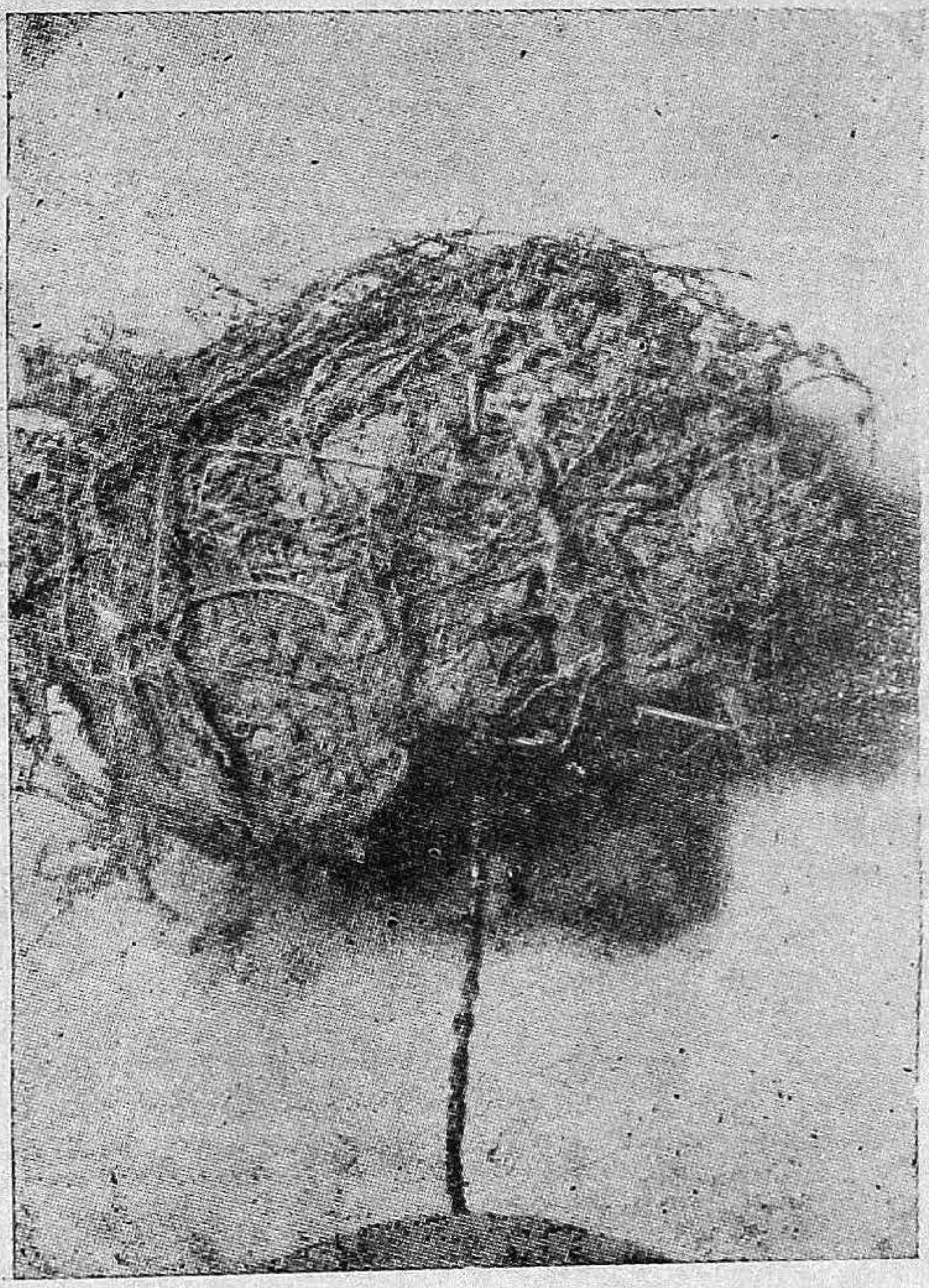

Figure 59. **Turdas merula simillimus** (Jerdon)
(The Nilgiri Blackbird : Nest)

Figure 60. Garrulax cachinnans (Jerdon)
(The Nilgiri Laughing Thrush)

The eggs vary in length from 23·4 mm. to 27·4 mm.. and in breadth from 18·8 mm. to 20·3 mm. ; but the average size of twenty eggs measured was 25·4 mm. by 19·3 mm.

Specimens in the collection :—

One egg : Length : 27 mm.

Breadth : 20 mm.

Colour : Pale blue with brownish spots.

One nest : Diameter : 130 mm.

Height : 100 mm.

Zoothera citrina Vigors.

[=**Geocichla citrina cyanotis** (Jerdon and Selby).]

[=**Geocichla cyanonotus** (Jerdon and Selby).]

(The White-throated Ground Thrush).

This species is reported to be found South of latitude 24° in India, but it seems to be confined almost entirely to Western India, where it is common from the South of Travancore to North Kanara and thence to Nasik and Khandesh. This species is plentiful about Dapuli in Southern Konkan.

The White-throated Ground Thrush breeds in Travancore in May and June ; in Kanara eggs have been found from May to July and in Southern Konkan during June. July and August. The nest is made of roots, twigs and grass with a good deal of mud used in its construction. The egg cavity is about five and half inches in diameter, and form two to three inches in depth. The nest is generally placed in the fork of a tree, low down. It is rearely placed above a height of about fifteen feet from the ground.

The eggs are normally three in number. although sometimes only two eggs are laid. The eggs resemble those of the Orange-headed Ground Thrush, although much less richly marked. The ground colour, very little of which is visible in some eggs, is a pale bluish or greenish white, and it is thickly freckled, blotched and streaked with more or less brownish or purplish red. The markings are usually most dense at the large end, where they often form a bold confluent cap, and at this larger end a few lilac spots are commonly intermingled with the red markings. Some eggs have all the markings fine and very thickly spread over the whole surface. Others have them thick, bold and blotchy all over the half towards the larger end, and only a few small spots scattered over the other half, and between these two types intermediate forms occur.

The eggs vary in lenght from 22·8 mm. to 27·4 mm.. and from 18·0 mm. to 20·1 mm. in breadth ; the average size of forty eggs measured is reported to be 25·0 mm. X 18·5 mm. (Baker).

Specimens in the collection :—

One egg : Length : 27 mm.

Breadth : 20 mm.

Colour : White, with pink and brownish spots.

Monticola cinclorhyncha (Vigors).

[=Petrophila cinclorhyncha (Vigors)]

(The Blue-headed Rock Thrush)

The Blue-headed Rock Thrush is found distributed from the Afghanistan and Baluchistan borders throughout the Himalayas and eastwards to East and South Assam, the Chin Hills and Kachin Hills. In winter it is found practically throughout India and West and Central Burma.

This species breeds throughout the Himalayas form Darjeeling to Murree at altitudes ranging from 4,000 to 9,000 feet, most often between 4,000 and 6,000 feet. They commence to breed in early April and throughout May, to the middle of June, and occasionally old nests with eggs may be found even in July and August, these latter being probably second broods.

The nests and eggs are exactly similar to those of the chestnut-bellied Rock Thrush (*Monticola erythrogastra*) except in size.

The nest is placed at the roots of trees, in holes in banks, and at the base of trees, or in hollows in banks overhung by tufts of grass or weeds. The nest is a rather shallow cup, nealty made of moss, grass, fir-needles and dead leaves, and lined with fine roots or a little hair, the materials varying according to the taste of the individual bird or perhaps according to locality. The nest measures externally from 4 to 5 inches in diameter and 2½ to 3 inches in height, and has a neat, nearly hemispherical cavity, about 3 inches wide and 1·5 inches deep.

The eggs are four in number. They appear to vary little in size or shape. They are rather elongated ovals, very blunt at the small end and having a slight gloss. In colour and texture, they resemble those of the species of *Stoparola* and *Niltava*. Looked at from a distance, the general colour of the egg is either a pale brownish pink, or a dingy buff, darkest towards the large end. When closely examined, the general tint appears to result from a pinkish white ground very closely and minutely freckled and mottled all over (but most densley at the large end) with pale, dingy brownish, salmon-colour, or reddish brown, with a few darker red specks and spots, here and there. The colour is so ill defined, that it is difficult to say what it is. The eggs have a slight gloss.

The eggs vary in length form 22·1 mm. to 25·1 mm., and in breadth from 17·3 mm. to 20·1 mm. The average size of fifty eggs measured is reported to be 23·7 mm. by 17·9 mm. (Baker).

Specimens in the collection :

One egg : Length : 28 mm.
Breadth : 20 mm.
Colour : White, with brownish spots.

Myiophoneus horsfieldi (Vigors.)

(The Malabar Whistling Thrush).

The Malabar Whistling Thrush breeds on the slopes of the Nilgiris, never ascending higher than 6,000 feet. The nest is always placed on some rock in mountain torrent. It is a coarse structure and very large for the size of the bird, measuring about 18 inches in diameter and 18 inches in height. Exteriorly, it is composed of roots, dead leaves and decaying vegetation of all kinds ; the egg cavity, which is saucer-shaped and comparatively shallow, is coarsely lined with roots. It breeds during March and April. Sometimes the nest is placed in the hole of a tree trunk high up, about 30 or 40 feet from the ground.

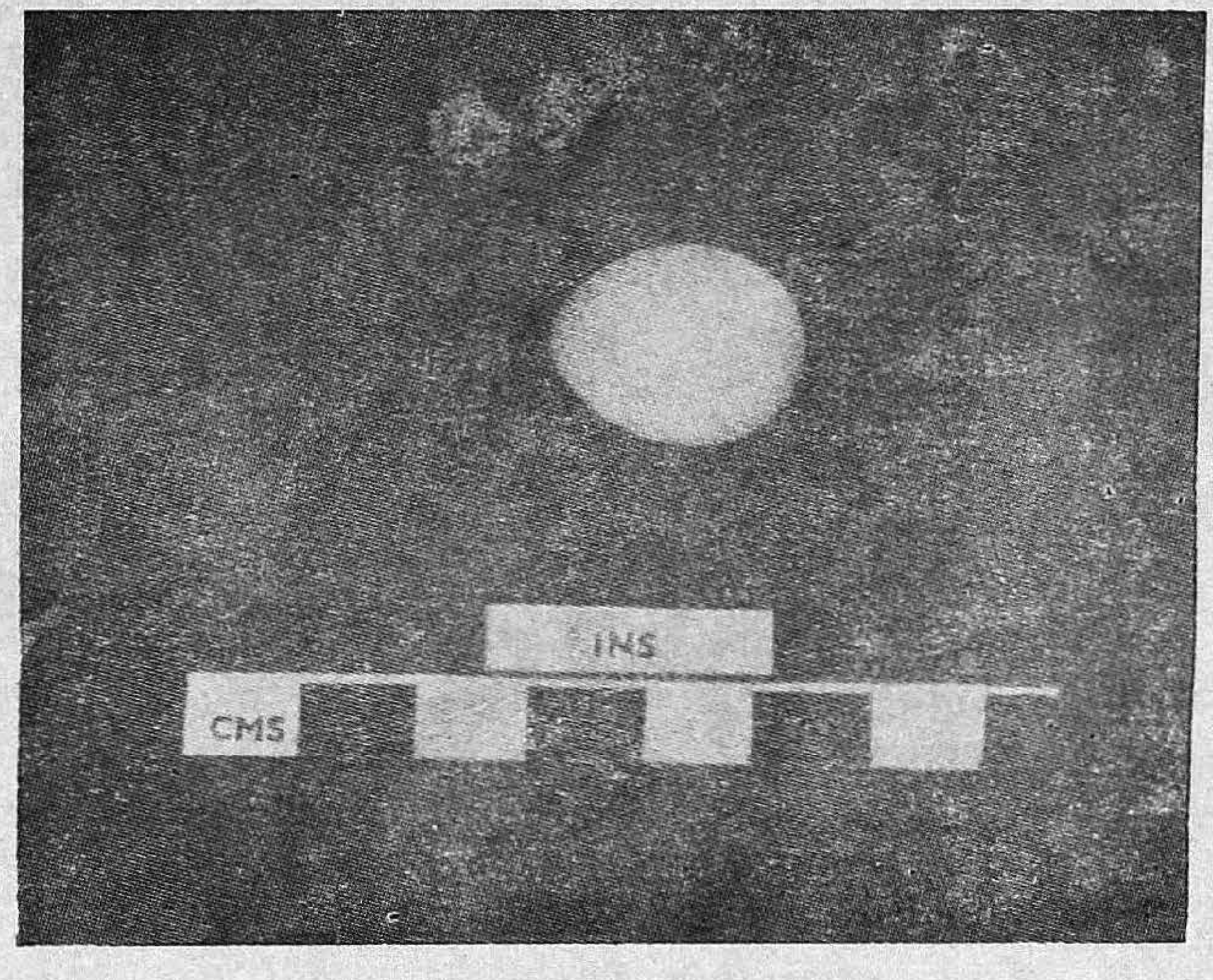

Figure 61. **Monticola cinclorhyncha** (Vigors)
(The Blue-headed Rock Thrush)

The eggs of this species are broad, nearly regular ovals, slightly compressed towards the lesser end; considerably elongated and more or less spherical and pyrifrom varieties also occur. The shell is fine and has a slight gloss ; the ground colour is pale salmon pink or pinkish white, occasionally greyish white.

The whole surface of the egg is, as a rule, finely speckled, spotted and splashed with pinkish brown or brownish pink. The markings, in most eggs, everywhere very fine, are often considerably more dense at the large end, where they are not unusually more or less underlaid by a pinkish cloud, with which they form an irregular, ill defined and inconspicuous cap.

At times more boldly and richly marked eggs are met with.

The eggs vary in length form 30·0 mm. to 37·6 mm., and in breadth form 23·4 mm. to 25·4 mm.

Specimens in the collection :—

Two eggs : (*i*) Length : 33 mm.
Width : 25 mm.
Colour : White, with very faint brown spots.
(*ii*) Length : 32 mm.
Breadth : 25 mm.
Colour : White, with very faint brown spots.

Thamnobia fulicata Linnaeus.

(The Black-backed Indian Robin).

The Indian Black-backed Robin breeds from March to June. These birds breed on the bare rocky plains, or in the cantonment areas among houses. In the former case, a hollow in the ground, either wholly or partly covered by a stone, is almost invariably the situation. This hollow is in many cases widened, if not made altogether, by the birds. In the neighbourhood of houses, any suitable hole in a wall or roof is chosen. Sometimes the nests are built in a thatched roof. They never build so high as the Magipie Robin (*Copsychus saularis*). The nest is generally composed of fine roots or coir, with one or two pieces of rag round the edge in front. The nest is internally neatly made of roots and fibres, but it has no very distinct lining.

The position of the nest is, as a rule, in a hole in a mud wall, a crevice in a stone wall, or in a cutting-side. As a rule, the height from the ground is between three and five feet.

The external dimensions of the nest vary with the nature of the hole in which it is built ; but however large the hole may be, it seems to be the habit of the bird to fill up the whole space level with the top of the nest. The internal dimensions are about 2½ inches in diameter and 1½ inches deep. The outer materials are coarse but soft, grass, stems of neem seeds and feathers being generally used. These are generally carelessly and ruggedly put together ; but the lining composed of very fine roots, grass, hair, wool and often pieces of onion-peel and snake skin, is neatly woven.

The largest number of eggs noticed in any one nest is three. Both parents share the labour of building the nest, and also of feeding the young ones.

Sometimes the nests are placed on the ground, under some stone, tuft of grass, or small bush ; once a nest of this species had been found in a small cactus bush, a foot or so above the ground.

This species breeds during the months of March, April, May and June in the Central, Western and Sothern provinces of Ceylon, the majority of nests being built at the end of April.

In shape, the eggs of this species are typically somewhat elongated ovals ; the shell is fine and close-textured and fairly glossy. The ground colour is white with, in many specimens, a faint greenish tinge or pinkish tinge. The markings, specks and spots are thickly set, sometimes chiefly at the large end (where they are always most numercus and usually more or less confluent), more usually over the whole surface of the egg, when closly examined these markings appear to consist of varying shades of reddish brown and brownish yellow, more or less intermingled with pale lilac or reddish purple. Sometimes, the eggs of this species are of a very pale, dusky bule, spotted all over with light brown and a few purplish spots here and there. In some eggs the markings are finer and more speckly, in others they are rather bolder and more blotchy.

The eggs vary in length from 19·3 mm. to 21·3 mm., and in breadth from 14·0 mm. to 15·7 mm. ; but the average size of seventeen eggs measured is 20·8 mm. by 15·0 mm.

Specimen in the collection :—

One egg :—Length : 23 mm.
Breadth : 17 mm.
Colour : Cream coloured, with brownish patches.

Copsychus saularis (Linnaeus).

(The Magpie Robin).

The Magpie Robin breeds throughout India. It lays from the end of March to nearly the end of July, but by far the majority of eggs are to be found alike in hills and plains during the latter half of April and May.

In the plains, the nest is generally composed of roots, grass, fibres and feathers, but in the hills, moss and lichens are largely used. In shape, the nest is typically a broad, very shallow, loosely built saucer, some 4 or 5 inches in diameter, and with a central depression about an inch in depth ; but they vary much, according to the shape and size of the cavity in which they are placed. Some are more regularly cup-shaped, while many are mere pads. A few small twigs, or a few dead leaves may at times be utilized for construction of the foundation.

The full complement of eggs appears to be five.

Sometimes this species builds its nest in holes in trees not very high from the ground. The nests placed in such holes are generally in the form of moderately large saucers about 4½ inches in diameter and nearly two inches thick, composed externally of rather coarse grass and the shallow egg depression is lined with finer grass and grass roots.

In Dehra Dun it is known to breed during May and June, constructing a shallow nest of fine, woody flower stalks, intermixed with fine roots and the dry tendrils of climbing plants, with a little moss externally, and placed within a hole in some large tree, or in a bank or well, where it normally lays five eggs.

This species is very common in the plains, and is a permanent resident in most parts of India. It frequents the haunts of man and usually nests in cavities and holes in trees and holes in buildings.

The nest exhibited in the Bird Gallery of this Museum is constructed inside an empty earthernware pot.

The eggs are typically oval, neither very broad nor very narrow: somewhat elongated pyriform and almost globular varieties also occur; they are moderately glossy. The ground colour varies as much as does the size and shape of the egg. In some eggs it is greenish, in others greenish white, while in others it is a beautiful pale sea-green, or, again, a delicate pale, only slightly greenish blue. Many of the eggs are perfect miniatures of eggs of *Merua lsimillima*, and recall varieties of those of the English Blackbird. The eggs are all

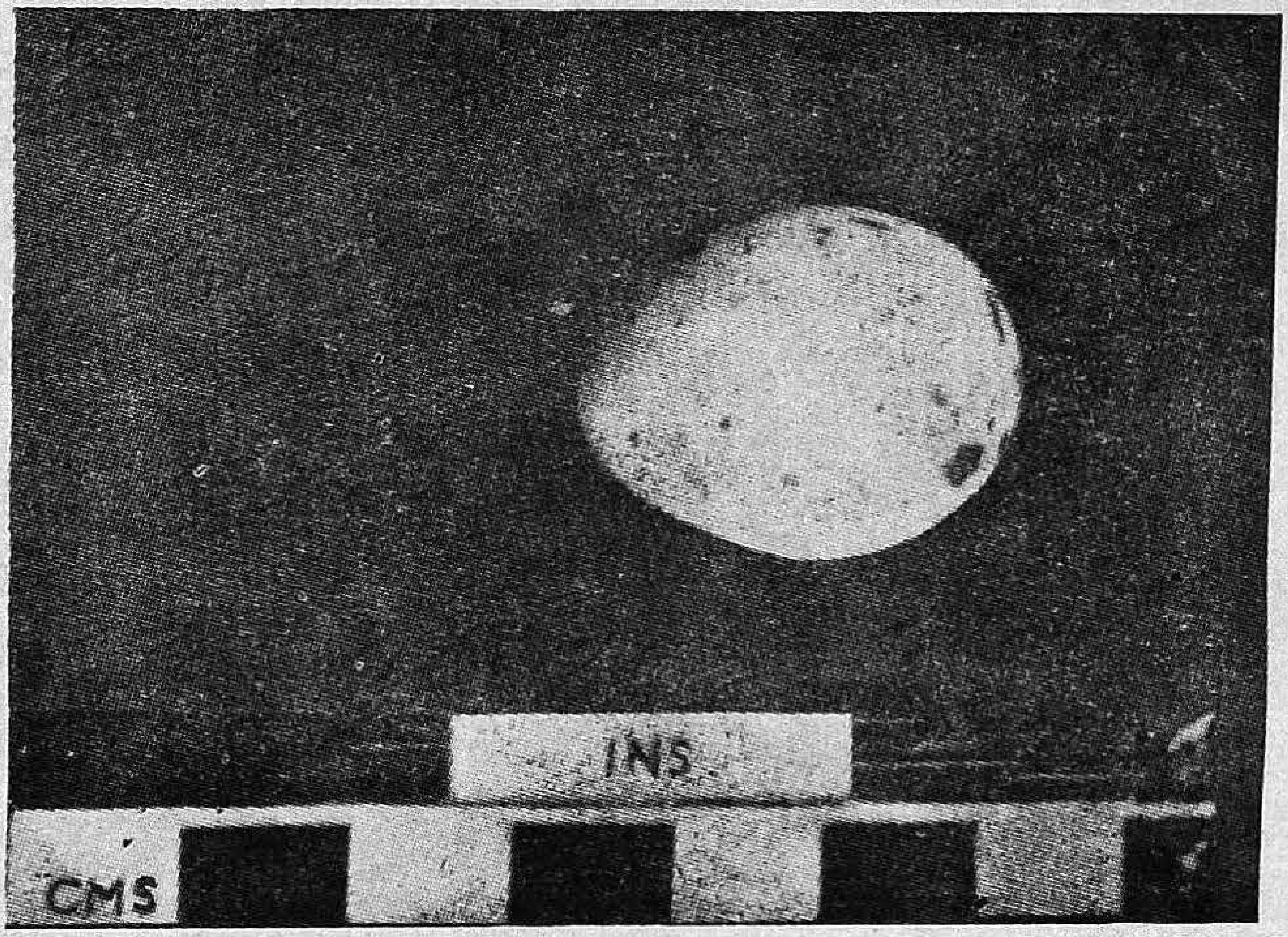

Figure 62. **Thamnobia fulicata** Linnaeus
(The Black-backed Indian Robin)

Figure 63. **Copsychus saularis** (Linnaeus)
(The Magpie Robin)
(Nest in earthernware pot)

streakily blotched and mottled with different shades of brownish red—some comparatively thinly, generally somewhat densely, and occassionally so closely as to leave but little of the ground colour visible. In all cases the markings are most numerous at the large end, where they very commonly form a conspicuous irregular mottled cap. Occasionally, but rarely, small specks and spots take the place of streaky blotches, and the smaller end is almost entirely free from markings. Faint underlying spots of pale inky purple are trace-able in a few specimens.

The eggs vary in length from 19·8 mm. to 24·1 mm. and in breadth from 15·2 mm. to 19·0 mm. but the average of forty-three eggs measured is nearly 22·1 mm. by slightly more than 16·8 mm.

Specimens in the collection:—

Three eggs:

(i) Length: 24 mm.
Breadth: 18 mm.
Colour : White with brown blotches.

(ii) Length: 24 mm.
Breadth: 18 mm.
Colour: White with brown blotches.

(iii) Length: 24 mm.
Breadth: 18 mm.
Colour: White with brown blotches.

In addition to the above mentioned isolated specimens of eggs, there is a nest built inside an earthernware pot, containing four eggs, the measurements of which are furnished below:

One nest (in a pot): Diameter: 107 mm.
Height: 147 mm.

Four eggs (contained in the above nest):

(i) Length: 23 mm.
Breadth: 18 mm.
Colour: Creamy white with brownish spots and patches.

(ii) Length: 23 mm.
Breadth: 18 mm.
Colour: Creamy white with brownish spots.

(iii) Length: 22 mm.
Breadth: 17 mm.
Colour: Creamy white, with brownish spots.

(iv) Length: 24 mm.
Breadth: 18 mm.
Colour : Creamy, with brownish spots and patches.

Pratincola atrata (Linnaeus).

(= Saxicola caprata Linnaeus).

(The Common Pied Bush Chat)

The Common Pied Bush Chat breeds throughout the plains of India and in the Himalayas upto elevations of about 4,000 to 8,000 feet.

The breeding season is from March to June; the majority, however, lay in the plains in March and April and in the hills in May.

In the plains the most favourite site for the nest is in a hole some little way down the side of a well; but any hole almost in the ground, if well sheltered, will serve the purpose; sometimes they will build in a dense bush or tuft of grass, but still, even then, actually on the ground or close to the ground.

The nest, as a rule, is a shallow, somewhat saucer-shaped pad, composed of soft grass, fine roots, etc., and lined with the same material or hairs or other soft material.

Sometimes the nest is composed entirely of human hair or sheep's wool fitted together without any attempt at rounding. Occassionally circular nests, closely woven of very fine grass have been found lined carefully with horsehair.

The eggs are normally four in number. They are rather broad ovals, somewhat, pointed towards one end and fairly glossy, Some what spherical varieties also occur. The ground colour is a delicate pale bluish green, and they are pretty finely speckled, mottled and streaked with brownish red. The markings are always densest at the large end, where they commonly form a mottled irregular cap, while towards the small end they are thin and sometimes altogether wanting. There are two types of markings—the one comparatively streaky and mottly, and the other, which is much rarer, speckly and spotty.

The eggs vary enormously in size. In length they vary from 15·2 mm. to 19·6 mm., and in breadth from 11·2 mm. to 16·3 mm.; but these extremes represent exceptional eggs. The average size of fifty eggs measured is 17·0 mm. by 14·0 mm.

Specimens in the collection:

One egg: Length: 21 mm.

Breadth: 17 mm.

Colour: White, with brownish spots.

Sub-family TIMALIINAE

Turdoides somervillei Sykes.

[= Crateropus somervillei (Sykes)].

(The Rufous-tailed Babbler).

The Rufous-tailed Babbler is confined to the narrow strip of country lying beneath the Ghats for about 60 miles north and south of Bombay and to the hills or Ghats overlooking this. This species is decidedly fond of hilly country and is common on the two ranges of low hills that run along the east and west shores of the Island of Bombay, but is never found in the gardens and groves in the plains.

The nest is a rather flat structure placed in horizontal branches of spreading trees in open, forest country. The situation of the nest is more or less the same as the one which the large Grey Babbler, *Argya malcolmi* choses, i.e., the end of a horizontal branch with no other branches underneath it.

The normal number of eggs appears to be three. The eggs are of an intense greenish blue colour. Not much is known about the nidification of this species.

Specimens in the collection:

Three eggs: (i) Length: 25 mm.
Breadth: 20 mm.
Colour: Bluish, glossy.

(ii) Length: 25 mm.
Breadth: 20 mm.
Colour: Bluish, glossy.

(iii) Length: 26 mm.
Breadth: 20 mm.
Colour : Bluish, glossy.

Turdoides caudatus Dumeril.

[= **Argya caudata** (Dumeril).]

(The Common Babbler.)

The Common Babbler breeds throughout India, not, however, ascending any of our mountain ranges to any great elevation.

These birds build their nests in low, thorny bushes, and occassionally in clumps of high grass, the nest being rarely more than three feet from the ground. The nest itself is cup-shaped and composed of grsass and roots, of ten unlined, but at times lined with very fine grass stems or horsehair. As a rule, it is neatly and compactly built, with a deep cavity some 2 to 3 inches in diameter, and 1·75 to 2·25 inches in depth.

Three is the normal number of eggs, but occassionally four eggs are met with.

The eggs are typically of a moderately elongated oval shape, slightly compressed towards one end, but more or less spherical any pyriform varieties occur. The eggs are glossy, often brilliantly so and of a delicate, pure, spotless, somewhat pale blue. The shade of colour in this egg varies very little.

The eggs vary in length from 19·1 mm. to 23·4 mm., and in breadth from 15·2 mm. to 17·8 mm.; but the average size of 115 eggs measured is reported to be 20·8 mm. by 16·3 mm.

Specimens in the collection :

One egg: Length: 21 mm.
Breadth: 17 mm.
Colour: Pale greenish blue.

Turdodies subrufus Jerdon.

[=**Timalia subrufus** (Jerdon).]

[=**Argya subrufa** (Jerdon).]

(The Rufous Babbler)

The Rufous Babbler occurs in the Western Ghats from Coonoor and Kotagiri on the Nilgiris to Khandala near Bombay. The breeding season extends over February and March.

The Rufous Babbler builds a nest of leaves, grass and creeper stems, lined with fine grass stems, which it places in a bush or tree standing in forest. The nest is a deep massive cup placed in the fork of twigs, coarsely and roughly, but still strongly built. The body of the nest is cheifly composed of leaves, some of which must have been green when used.

Outside, the leaves are held in position by blades of grass, creepers and stems of herbaceous plants, carelessly and roughly wound about the exterior. The cavity is rather more neatly lined with tolerably fine grass blades or bents. Exteriorly, the nest is about 7 inches in height and 5 inches in diameter. The cavity is about 3½ inches deep by 3 inches in diameter.

The eggs seem to be usually three in number, sometimes only two, but sometimes four. They are precisely like those of the several species of *Argya*, being moderately broad ovals rather obtuse at both ends, often with a tendency to be pear-shaped or pyriform. They are of the typical glossy blue type of eggs laid by species of Babblers generally. The colour is a uniform, rather dark, spotless clear blue with a faint greenish tinge and the eggs have usually a fine gloss.

The eggs measure about 24·2 mm. in length and 18·5 mm. in breadth.

Specimens in the collection:

Two eggs: (i) Length: 27 mm.
Breadth: 20 mm.
Colour: Pale greenish blue.
(ii) Length: 27 mm.
Breadth: 20 mm.
Colour: Pale greenish blue.

Turdoides terricolor malabaricus (Jerdon).

(=**Crateropus canorus** Linnaeus.)

(The Southern Jungle Babbler.)

The Jungle Babbler, commonly known as the "Seven Sisters" from its habit of going about in small flocks of about 6 to 12 birds, breeds principally in June and July after the break of the monsoon. The southern race, *malabaricus*, of which an egg is representsted in the Museum collection, occurs all over South India and is common in many parts of the Nilgiris. Although the principal breeding season is June and July this bird seems to be irregular in its time of breeding and odd nests and eggs have been found any time from March to even October and December.

The nest is usually cup-shaped, consisting of grass, leaves and roots, etc., carelessly bound together with weeds and twigs and lined with grass or roots and they may be placed in any kind of bush or tree at heights of a few inches only up to 30 feet from the ground.

From three to five eggs are laid, but the usual number of eggs is four. The nests of this species are frequently victimized by the Pied Crested Cuckoo or the Hawk Cuckoo which lay their eggs in the Jungle Babbler's nests and it is difficult to distinguish the cuckoos' eggs from those of the fosterers, but as a rule they are less glossy and of a softer and more satiny texture and more elliptical in shape.

The eggs of this species are very variable in colour, shape and size. Typically, they are rather broad ovals and somewhat compressed towards one end. The colour varies from a pale blue to a deep verditer blue or deep greenish blue. The eggs are typically glossy and the deepest coloured eggs are always far more glossy than the lighter coloured ones. Some deep blue eggs of this species are most intensely glossy, more so than almost any other Indian bird's eggs except those of the Bronze-winged Jacana, *Metopidius indicus*. The eggs are entirely spotless and devoid of all markings, and the shade of the blue colour is uniformly the same in any particular egg.

The eggs vary in length from 23·6 mm. to 25·9 mm., and in breadth from 18·0 mm. to 20·8 mm. The average size of one hundred eggs measured is reported to be 25·2 mm. × 19.6 mm. (Stuart Baker).

Specimens in the collection:

One egg: Length: 25 mm.
Breadth: 17mm.
Colour: Pale greenish blue, without any markings

Turdoides affinis affinis Cretzschmar.

[=**Turdoides griseus** (Gmelin)].

[=**Crateropus griseus** (Gmelin)].

(The White-headed Babbler).

The White-headed Babbler breeds all over the plains of Southern India and does not ascend the hills to any great elevations.

This species breeds apparently twice a year from April to June, and again in October and even later.

In and around Madras, the nest of this species is commonly placed in thick, thorny hedges of a shrub (*Pithecolobium dulce*) locally known as "Kurka-pulli". The nest is a loosely made cup, composed of grass stems and roots, or small twigs and roots, carelessly and loosely put together and placed not very high above the ground. It lays three or four blue eggs generally, but the eggs vary from three to five in number. The nests are generally placed in thorny bushes.

The eggs are regular, somewhat cylindrical ovals, excessively glossy, spotless and of a deep greenish blue colour, much deeper than the eggs of any other species of *Turdoides*, as a rule. In fact, they approach in colouration, the eggs of the White-throated Laughing Thrush (*Garrulax albigularis* Gould). Four is the usual number of eggs.

The eggs vary in length from 22·7 mm. to 25·4 mm., and in breadth from 15·7 mm. to 18·8 mm.

Specimens in the collection:

One egg : Length : 24 mm.
Breadth : 17 mm.
Colour : Pale greenish blue.

In addition to the above-mentioned isolated egg, there is one nest containing four eggs the measurement of which are furnished below:—

Four eggs : (i) Length : 24 mm.
Breadth : 20 mm.
Colour : Pale bluish green.

(ii) Length : 23 mm.
Breadth : 20 mm.
Colour : Pale bluish green.

(iii) Length : 24 mm.
Breadth : 20 mm.
Colour : Pale bluish green.

(iv) Length : 24 mm.
Breadth : 20 mm.
Colour : Pale bluish green.

One nest : Diameter : 150 mm.
Height : 95 mm.

(Turdoides malcolmi (Sykes).

[=Argya malcolmi (Sykes)]

[=**Timalia malcolmi** (Sykes)].

(The Large Grey Babbler).

The Large Grey Babbler is found over the greater portion of the Peninsula of India south to the Nilgiris and Mysore, and is common in the central parts of Western India, but rare in the North West. To the East it is found as far as Allahabad.

This species breeds throughout the year, but possibly more regularly in the early rains. In the Central and North Western Provinces it lays from early in March until late in September, having at least two and often three broods.

The nest is placed on low branches of small trees or in thick shrubs or bushes, or cactus hedge, at no great elevation from the ground, say, at heights of from 4 to 10 feet, but occasionally it may be placed at considerable heights from the ground.

The nest is a somewhat loosely woven, but yet generally neat, cup-shaped structure, composed, as a rule, chiefly of grass roots, but often with an admixture of thin sticks and grass. Generally there is no lining, but sometimes the nests are scantily lined with very fine grass and even horeshair ; but when the nest is entirely unlined, as is generally the case, the inside of the nest is very neatly and smoothly finished. Externally the nest is about 5 or 6 inches in diameter and 3 or 4 inches in height; the cavity is about 3 to 4 inches across and from 2 to nearly 3 inches in depth.

The eggs are usually four in number and are of the usual shape, colour and texture that is typical of Babbler's eggs. The eggs of this species are almost exactly like those of the Jungle Babbler (*Crateropus canorus* Linn.) Typically, they are rather broad ovals, somewhat compressed towards one end ; some are, however, long and cylindrical while others are more or less spherical. The colour varies from a pale blue to a deep dull blue. The eggs are typically glossy and the deepest coloured eggs are always the most highly glossy. The eggs are entirely spotless and devoid of all markings. However, the eggs of this species are less variable in colour than those of the Jungle Babbler (*Crateropus canorus*).

The eggs vary in length from 22·4 mm. to 27·9 mm. and in breadth from 18·5 mm to 21·6 mm. The average size of one hundred eggs measured is reported to be 25·2 mm. × 19·4 mm. (Baker).

Specimens in the collection:

One egg : Length : 27 mm.
Width : 20 mm.
Colour : Pale greenish blue.

Dumetia hyperythra (Frankiln.)

(The Rufous-bellied Babbler).

The Rufous-bellied Babbler breeds throughout the Central Provinces. (Madhya Pradesh), Chota Nagpur, Upper Bengal and Eastern portions of the North West Provinces, parts of Oudh, and even in the low Valleys of Kumaon. It lays from the middle of June to the middle of August, building a globular nest of broad, grass blades or bamboo leaves some 4 or 5 inches in diameter, sparingly lined with fine grass-roots or a little hair or sometimes entirely unlined. The nest is placed sometimes on the ground amongst dead leaves, some of which are not infrequently incorporated in the structure ; sometimes it is placed in coarse grass or in some little shrub a foot or two from the ground, but by preference, in amongst the roots of a bamboo clump. Four is the usual number of eggs laid.

The eggs are short, broad ovals, very slightly compressed towards one end. The ground colour is white or pinkish white, and it is streaked, spotted and speckled most thickly at the large end (where there is a tendency to form an irregular confluent cap or zone), and thinly towards the small end, with shades of red, brownish red and reddish purple, varying much in different examples. In some, the markings are pretty bold and blotchy, in others they are small and speckly ; in some they are smudgy and ill defined ; in others, they are clear and distinct. Some of the eggs are miniatures of some types of *Pyctorhis sinensis*, but many recall the eggs of the Titmouse. They are of much the same size as those of *Parus coeruleus* and *Parus palustris*, but a trifle less broad than either of these. The eggs have a faint gloss.

The eggs very in length from 16.0 mm. to 17.8 mm. and in breadth from 12.7 mm. to 14.2 mm. ; but the average size of twenty-four eggs measured is reported to be 17·0 mm. 13.5 mm.

Specimens in the collections :

One egg : Length : 16 mm.

Breadth : 14 mm.

Colour : Creamy, with pinkish spots.

Dumetia hyperythra albogularis Franklin.

[=Pyctorhis sinensis sinensis (Gmelin)].

(=The Indian Yellow-eyed Babbler),

This species occurs throughout India and practically all over Burma, south to Tenasserim; its distribution also extands into Siam and Annam.

The Indian Yellow-eyed Babbler breeds throguhout the plains of India as also in the Nilgiris, up to an elevation of 5,000 feet and in the Himalayas to about 4,000 feet. In Assam this Babbler breeds mainly from the middle of May to the middle of July, but in India, further south, they breed from June to September, while occasionally eggs have been found even in October.

Gardens are the favourite localities for nesting, and in these the little bird makesits compact and solid nest. The nest is a beautifully built cup or inverted cone of fine, soft grass and fibre lined with the same and well bound with cobwebs. It may be placed in a bush, weed or a clump of grass or in sugar cane or crops ; it is placed sometimes in the fork of the fine twigs of a lame bush, sometimes in a mango, orange or apple tree, occasionally suspended between three stout grass stems, or even attached to a single stem of the huge grass stems from which the native pens are made. In Assam they build in the centre of the great fields of sun-grass which extend for miles over the undulating plateaux between 1,000 and 3,000 feet and are never found elsewhere, but in other parts of India they build their nests in all kinds of scrub and grass-land and even in gardens.

The nest is typically cone-shaped (the apex pointing downwards), from 5 to 6 inches in depth, and 3 to 4 inches in diameter at the base, but it varies in size and shape according to the situation, the cone being often broadly truncated. In the base of the cone (which is uppermost) is the egg-cavity, measuring from 2 to 3 inches in diameter and from 2 to 2·5 inches in depth. The nest is very compactly and solidly woven, of rather broad blades of grass, and long strips of fine, fibrous bark, exteriorly more or less coated with cobwebs and gossamer threads. Interiorly, fine grass stems and roots are neatly and clossely interwoven. Occasionally, horsehair may be found mixed along with the grass roots, but this is unusual.

The eggs number three to five and vary greatly in colour, and also in size and shape. They are mostly of a very broad, oval shape, very obtuse at the smaller end. Some are, however, slightly pyriform and some a little elongated. There are two very distinct types of colouration : the most common type is pale yellowish or pinkish white in ground

colour, rather densely marked all over with light red speclkes and spots or more rarely blotches ; sometimes the surface may be mottled and streaked with more or less bright and deep brick-dust red, so that the ground colour only faintly shows through here and there, as a sort of pale mottling. In the other type, the ground colour is pinkish white, somewhat sparingly, but boldy blotched with irregular patches and eccentric, hieroglyphic-like streaks of pale, pinkish red, reddish brown or deep purple brown, sometimes with a few irregular streaks and lines, and generally with some underlying marks of a dull natural tint. A third type has a pure white ground colour, with bold blotches of deep purple brown, or pale inky purple, at the larger end. There is yet another type somewhat intermediate between the first two types, in which the ground colour, instead of being finely freckled all over as in the first type or sparingly blotched as in the latter, is very coarsely mottled and clouded with red. The eggs have often a fine gloss.

The eggs vary in length from 16·5 mm. to 20·3 mm., and in breadth from 13·5 mm. to 17·3 mm. The average size of one hunderd eggs measured is reported to be 17·9 mm.× 14·9 mm. (Baker).

Specimens in the collection :

One egg : Length : 19 mm.
Breadth ; 15 mm.
Colour : White, with prominent black spots and greyish dots.

Prinia subflava inornata Sykes

(The Indian Wren Warbler).

The Indian Wren Warbler breeds from June to about the middle of Septmber. The nests are very elegant, closely and compactly woven and are composed of very fine blades of grass of strips of blades of grass are extremely fine and narrow, seldom exceeding one-twentieth of an inch in width, and are always used when they are fresh and green and quite flexible. The nest varies in shape and size according to its situation. A favourite locality is amongst clumps of serpent-grass where the birds build long and purse-like nests attached above and all round to the surrounding grass stems, with a small entrance near the top. Such nests are often 8 or 9 inches in length and 3 inches or even more in external diameter and with an internal cavity measuring 1½ inches in diameter and having a depth of nearly 4 inches below the lower margin of the entrance hole. Sometimes the nests are hung between bare twigs of thorny bushes or may even be placed in low, herb-like plants ; in these cases, the nests are nearly globular, with the entrance hole near the top ; these nests are about 3½ inches in external diameter. At other times, the nests are hung between two or three leaves to which the birds attach the nest as in the case of the Tailor bird.

The eggs are normally four in number. They are moderatley long and generally almost perfectly oval in shape, often pointed towadrs one end, sometimes globular and seldom, if ever, much elongated. The egg shell is fine and glossy and relatively thick and strong. The ground colour is normally a beautiful pale greenish blue, richly marked with varoius shades of deep chocolate and reddish brown. The markings consist of a combination of bold blotches and spots with delicate, intricately interwoven lines. The markings are invariably most conspicuous at the large end where there is a confluent cap and the delicate lines are alomst always confined to the broader half of the egg. Usually the smaller end of the egg is entirely spotless. Occasionally, the ground clour of the eggs, instead of being a bright greenish blue, is a pale, rather dull, olive green, and still more rarely it is a clear pinkish white.

The eggs vary in size from 13·5 mm. to 17·8 mm. in length and from 10·7 mm. to 12·7 mm. in breadth ; the average size of about 120 eggs measured is reported to be 15·5 mm.× 11·4 mm.

Specimens in the collection :

One nest : Height : 122 mm.
Breadth at the middle : 80 mm.
Diameter of the opening : 40 mm.

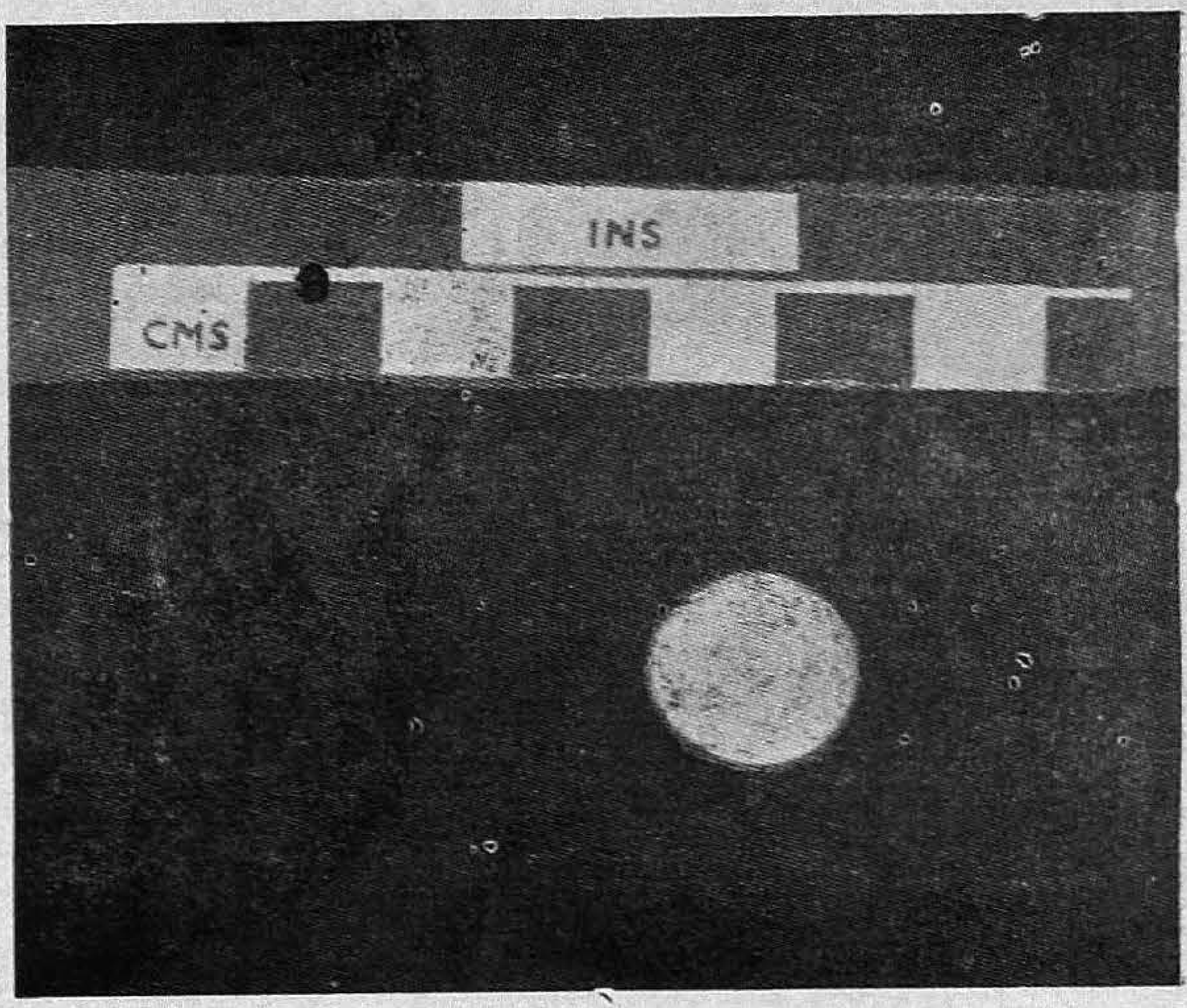

Figure 64. **Dumetia hyperythra albogularis** Franklin
(The Indian Yellow-eyed Babbler)

Figure 65. **Orthotomus sutorius sutorius** Hodgson
(The Indian Tailor Bird ; Nests)

Orthotomus sutorius sutorius Hodgson

(The Indian Tailor Bird).

The Indian Tailor Bird breeds throughout India and Burma, alike in the plains and in the hills (e.g., the Himalayas and the Nilgiris) up to an elevation of from 3,000 to 4,000 feet.

The breeding season lasts from May to August, both months included, but in the plains more nests are to be found in July, and in the hills more in June than during the other months.

The nest, as is well known, is a deep soft cup, enclosed in leaves, which the bird sews together to form a receptacle for it.

It is placed at all elevations. The nests vary much in appearance, according to the number and description of leaves which the bird employs and the manner in which it employs them. But the nest itself is usually chiefly composed of fine cottonwool, with few horsehairs and, at times, a few very fine grass stems as a lining, apparently to keep the wool in its place and enable the cavity to retain permanently its shape. The tailor bird makes its nest with cottonwool, and various other soft materials, sometimes also lined with hair, and draws together one leaf or more, generally two leaves, on each side of the nest, and stitches them together with cotton, either woven by itself, or cotton thread picked up, and after passing the thread through the leaf, it makes a knot at the end to fix it. The nest is generally built at from two to four feet from the ground. The eggs are two, three or four in number, and in every case white spotted with reddish brown chiefly at the large end.

In the hills, the Tailor Bird is seldom met with on the highest ranges, but appears to prefer the relatively warmer climate prevailing at elevations of about 3,500 to 4,000 feet. They often build in the coffee trees. Two of the coffee tree leaves are bent down and sewn together. The threads are of cobweb, and the cavity is lined with the down of seed-pods and fine grass. At the back of the nest, the leaves are made to meet, but are a little apart in front so as to form an opening for the birds to hop in and out. The depth of the nest inside is about 2½ inches.

The eggs are typically long ovals, often tapering much towards the small end. The shells are very thin, delicate, semi-transparent and have but little gloss.

The ground colour is either reddish white or pale bluish green. Of the two types, the reddish white is the more common, in the proportion of two to one. The markings consist of bold blotchings or sometimes ill defined clouds (in this respect recalling the eggs of *Prinia ornata*) chiefly confined to the large end, and specks, spots and splashes, extending more or less over the whole surface, typically of a bright brownish red, varying however, in different examples both in shade and intensity. The markings have a strong tendency to form a bold, irregular zone or cap at the large end, and in some specimens the markings are entirely confined to this portion of the egg surface.

The eggs which have a reddish white ground colour, though smaller one of a much more elongate shape, closely resemble those of *Suya fuliginosa*.

The eggs vary in length from 15·2 mm. to 17·8 mm., and in breadth from 11·4 mm. so 12·7 mm., but the average of fifty eggs measured is reported to be 16·3 mm. by 11·7 mm.

Specimens in the collection :

One egg : Length : 27 mm.
Breadth : 9 mm.
Colour : White, with brownish spots.

Three nests : (i) Diameter : 42 mm.
Height : 195 mm.

(ii) Diameter : 46 mm.
Height : 214 mm.

(iii) Diameter : 60 mm.
Height : 77 mm.

Cyornis rubeculoides rubeculoides (Vigors).

[=**Phaenicura rubeculoides** (Vigors)].

[=**Muscicapa rubeculoides** (Vigors)].

(The Blue-throated Flycatcher).

This is a migratory species. In summer it is found throughout the Himalayas from Kashmir to Burma and the hills of Burma, south to Tenasserim. Eastwards, it is found in Yunnan, Assam, Siam, Cochin and China. In winter, it occurs throughout Eastern and North Eastern India, Burma, etc.

This Flycatcher breeds throughout the hilly portions of its habitat between 2,000 and 7,000 feet, but principally between 3,000 and 5,000 feet in the months of April, May and June. It makes a cup-shaped nest of moss and moss roots, often with a few leaves or scraps of grass incorporated in the base and lined with fine roots. The nest is placed in any convenient hollow in a bank, rock or tree, but preferably in natural holes in old tree stumps which are well concealed by moss or creepers.

The eggs vary from three to five in number. They are moderately elongated ovals, somewhat pointed towards one end. The egg shell is fine and smooth and has a faint gloss. The ground colour is apparently a creamy white or a pale clay, sometimes with a pink or greenish tinge, thickly freckled and mottled all over with a sort of pale brownish pink and pinkish grey or reddish brown. In fact they are so heavily and closely covered with microscopic specks of reddish brown that they appear to be uniformly coloured clay brown or olive brown and very little of the ground colour is visible anywhere. The freckling is much more dense at the broad end where it forms a more or less uniform but very ill defined, dull, pale brownish pink cap.

The eggs measure about 18·5 mm. in length and 14·0 mm. to 14·2 mm. in breadth. The average size of forty eggs measured is reported to be 18·3 mm. x 14·0 mm. (Baker).

Specimens in the collection :

One egg : length : 20 mm.
Breadth : 15 mm.
Colour : Brownish white.

Muscicapa albicaudata Jerdon.

[=**Stoparola albicaudata** (Jerdon)].

(The Nilgiri Blue Flycatcher).

This species is found in the hills of Southern India from 2,000 feet upwards. It is common is Travancore in suitable places and it has also been recorded from Wynaad, Palghat and Southern Kerala.

The Nilgiri Blue Flycatcher breeds only on the Nilgiris at Ootacamund, Coonoor, Neddiwattam, Kartairy, Kotagiri and other places from elevations of about 3,800 to 6,200 feet above the sea level. It also breeds in the Pulney Hills.

The breeding season extends over March, April and May at all elevations from 2,500 feet upwards but more frequently above 4,000 feet than below this height. The nest is cup shaped, made of moss and roots and lined with the later material. The nests are practically soft masses of beautiful moss, with a slight substructure of coarse moss and lichen, measuring some five inches in external diameter and perhaps one inch in depth towards one side. Very rarely a few feathers are found in the lining in addition to the moss roots. Most nests are placed in holes or depressions in banks, but others are placed in holes in walls, rotten trees or under bridges and culverts.

The eggs are two to four in number, generally three, and sometimes only two. The eggs vary a great deal in size, shape and colour, but they are almost without exception larger and more highly coloured than those of *Stoparola melanops* (the Verditer Flycatcher). In shape they are elongated, sometimes greatly elongated, ovals, with normally little or no gloss. The ground colour varies from creamy white to a prettywarm *cafe au lait* colour. In some eggs there are no discernible markings; only the tint grows deeper and brighter towards the large end, with pale reddish brown, brownish red, or red, as the case may be. In a few eggs, there is a regular zone of minute red specks round the large end. On the whole the eggs resemble those of other species of *Muscicapa* (=*Stoparola*) generally.

The eggs vary in length from 19·3 mm. to 22·4 mm. in length, and from 14·0 mm. to 16·7 mm. in breadth; the average size of sixty eggs measured is reported to be 19·9 mm. m 14·8 mm. (Baker).

Specimens in the collection :

One egg : Length : 21 mm.

Breadth : 16 mm.

Colour : Creamy white.

Rhipidura albifrontata Franklin.

(=Rhipidura aureola aureola Lesson).

(The White-browed Fantail Flycatcher).

This species is found practically over the whole of India with the exception of the southern part of Kerala and Assam, south of the Brahmaputra. It breeds throughout its range, all over the plains of northern and peninsular India up to elevations of about 5,000 feet and occasionally 1,000 feet higher. In the lower ranges of the Himalayas it breeds up to an elevation of at least 4,000 feet. Its breeding season is usally very prolonged and eggs may be found any time from March to August, and most birds of this species apparently breed at least twice in a year.

The nest is a neatly made cup composed of fine shreds of grass blades sometimes mixed with a few of the finer grass stems, shreds of bamboo or other leaves; these are, however, not very conspicuous and, as a whole, the nest looks as if made of dry grey grass well coated with cobwebs and sometimes with spiders' egg bags attached to it. Often the bottom of the nest is prolonged into a cone and sometimes furnished with a long, thin tail of loose scraps of grass. The nest is usually placed on the broad surface of some horizontal bough or branch; sometimes it is placed in a small vertical or horizontal fork. The nest may be at any height from four to forty feet from the ground, though, as a rule, the nest is placed at a height of less than fifteen feet from the ground.

The eggs are generally three in number, sometimes two or four. They are typically moderately broad ovals, a good deal compressed towards one end. In colour, they are pale yellowish white or pale fawn, occasionally almost pure white and rarely tinged with pink. The ground colour varies from pure white to very pale yellowish brown or dingy cream colour; the markings consists of small blotches of yellowish brown with secondary markings of neutral tint and pale grey. The markings are, as a rule, distributed in a ring and confined to a broad, irregular zone near the larger end and sparse elsewhere. They are greyish brown specks and spots of greater or less intensity of colour and often more or less confluent or connected together by a dull haze of the same colour and at times intermingled with spots or tiny clouds of very faint inky purple. The lower end of the egg inside the zone is commonly thinly speckled with spots similar to those composing the ring-line zone. The lower portion of the egg below the zone is in many cases spotless; in other cases it is very thinly speckled like the space inside the zone. In some eggs the markings are absolutely confined to the zone.

The eggs vary in length from 15·2 mm. to 19·3 mm., and in breath from 12·2 mm. to 14·0 mm.; the average size of one hundred eggs measured is reported to be 16·8 mm.× 12·2 mm. (Baker).

Specimens in the collection :

One nest : Diameter : 54 mm.

Height : 93 mm.

Depth of the nest cavity : 31 mm.

Family PARIDAE.

Parus major cinereus Vieillot.

(=Parus atriceps Horsfield.)

(The Indian Grey Tit).

The Indian Grey Tit breeds throughout the more densely wooded mountains of India, wherever these attain an altitude of 5,000 feet, at elevations of from 4,000 or 5,000 feet to even 9,000 feet.

In the Himalayas, the breeding season extends from the end of March to the end of June or even a little later, according to the season. They have two broods-the first clutch of eggs is generally laid in the last week of March or early in April ; the second towards the end of May or during the first half of June.

In the Nilgiris, they lay from February to May, and probably a second time in September or October.

The nests are placed in holes in banks in walls of buildings or of terraced fields, in outhouses of dwellings or deserted huts and houses, and in holes in trees, and very frequently in those cut in some previous year for their own nests by Barbets and Woodpeckers.

Usually only four eggs are found, but sometimes it lays five or even six eggs. In shape, the eggs are a broad oval, but somewhat elongated and pointed towards the small end, The ground colour is pinkish white, and round the large end, there is a conspicuous, though irregular and imperfect, zone of red blotches, spots, and streaks. Spots and specks of the same colour, or occasionally of a pale purple, are scantily sprinkled over the rest of the surface of the egg, and are most numerous in he neighbourhood of the zone. The eggs have a faint gloss. Some do not exhibit the zone referred to above, but even in these, the markings are much more numerous and dense towards the large end.

The eggs vary in length from 16·5 mm to 19·8 mm., and in breadth from 12·7 mm. to 174· mm.

Specimens in the collection :

One egg : (in a damaged condition):

Length : 17 mm.

Breadth : 13 mm.

Colour : White, with pinkish and yellowish dots.

Figure 66. **Rhipidura albifrontata** Franklin
(The White-browed Fantail Flycatcher : Nest)

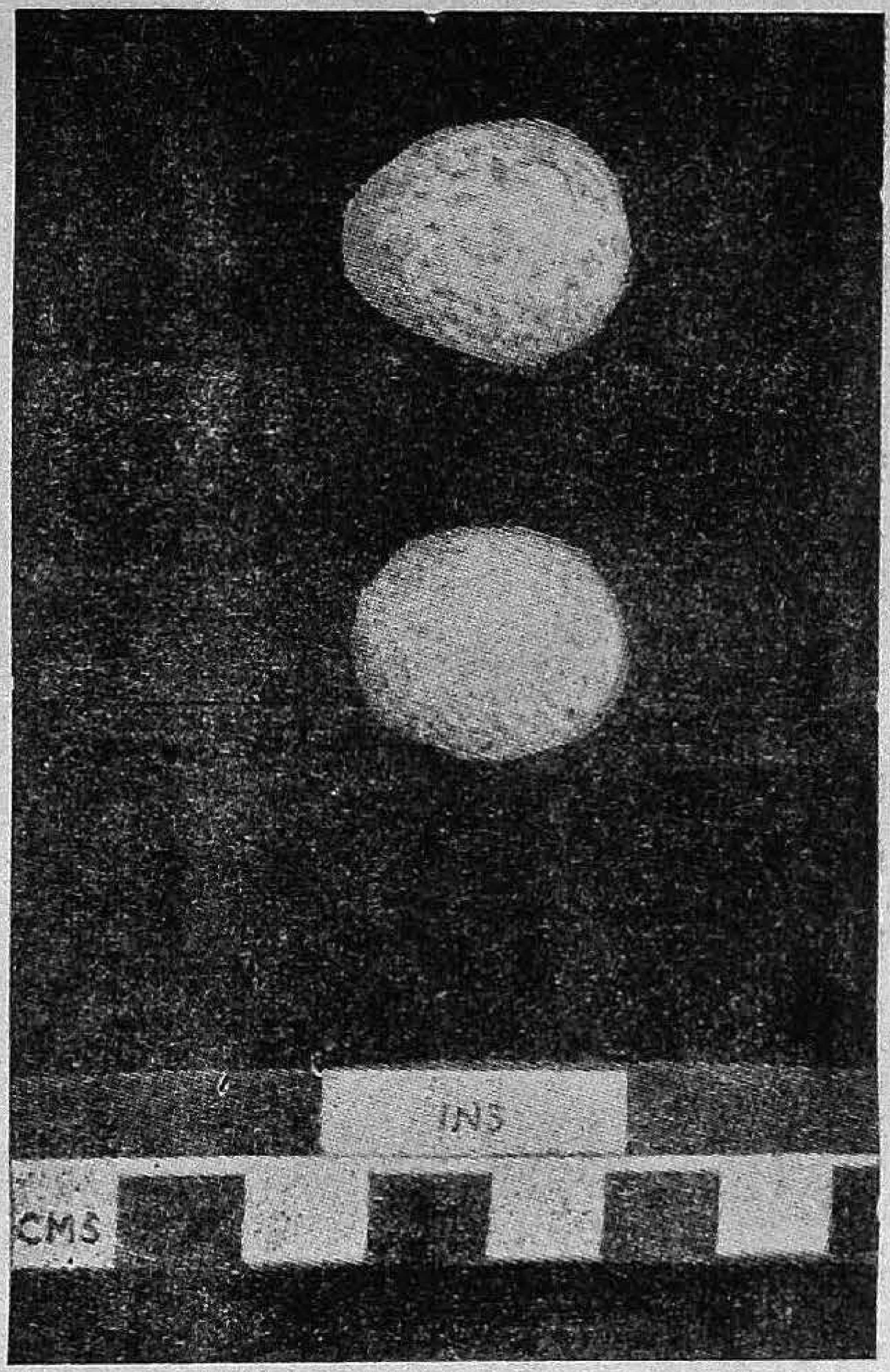

Figure 67. **Dicaeum agile agile** Cuvier
(The Thick-billed Flower Pecker : Eggs)

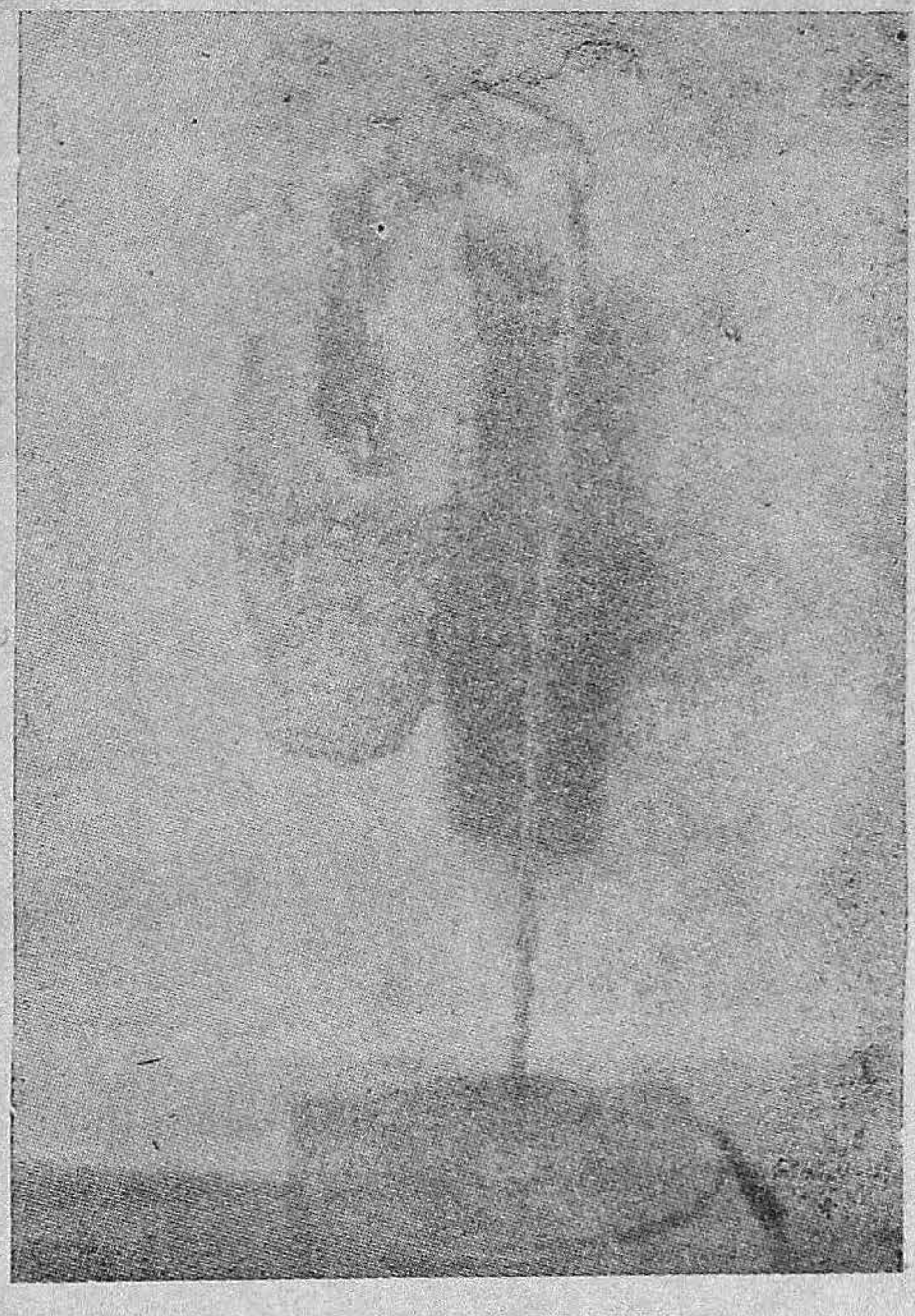

Figure 68. **Dicaeum agile agile** Cuvier
(The Thick-billed Flower-Pecker ; Nest)

Family DICAEIDAE

Dicaeum agile agile Cuvier.

[Piprisoma squalidum (Burton)].

(The Thick-billed Flower-Pecker).

The Thick-billed Flower Pecker lays from the middle of February to the end of May, according to locality breeding earlier in the plains and later in the Himalayas.

The nests vary greatly in material, but very little in size or shape. They are invariably small, rather flat-bottomed, purse-like bags, hung from a small twig as nearly horizontal as possible, and with the aperture with its major axis in the same plane as the twig from which the nest is suspended and immediately below the twig. The total length of the nest, measured from the upper surface of the twig to the bottom of the rest is from 3½ to 3¾ inches The breadth of the nest at the point of suspension is about half an inch and the lower, baggy portion of the nest is about 2 inches in diameter. The depth of the nest exteriorly below the lower edge of the entrance aperture is about 1½ inches. Typically, the nest is a felt-like pliable structure composed of fibres and the down taken from young shoots and flower buds of various plants.

Sometimes it makes a nest of widely different materials, although of the same size and shape. In these cases the exterior skin of the nest is a very loose network of very fine, tow-like fibres, backed internally throughout by a thick felting of the soft, silky pappus or seed down apparently of some asteraceous plant.

The nest is usually a neat structure, pendent from a their branch of a tree. It is sometimes composed of the pubescent covering of the skins of some species of *Loranthus* which the birds had scraped off and, mixing with spiders' webs, had woven into a thin felt. The shape of the nest is generally that of a purse opening down the side.

Two or three eggs are laid each time, the bird having at least two broods in the year.

The eggs vary great deal in size and shape, as well as in colour. Typically, they are rather elongated ovals, being usually moderately elongated, but comparatively shperical and somewhat pyriform examples occur. The ground colour varies from white just tinged with rosy to a decided pink, and the markings from brownish pink to claret colour. They markings ,again, are comparatively large spots, at others mere specks ; in some eggs they are sparse, in others thickly studded, and in all specimens they are most numerous towards the large end, where they sometimes form an irregular zone or cap, and in some are almost confined to this part of the egg. Normally the eggs are of a light pink ground colour blotched indistinctly with pink spots, more frequent and massed at the obtuse end.

The eggs are rather large for the size of the bird. The eggs vary in length from 15·2 mm. to 17·5 mm. and in breadth from 10·9 mm. to 11·9 mm,. but the average size is about 16·0 mm. by 11·4 mm.

Specimens in the collection:

Two eggs : (i) Length : 17 mm.
Breadth : 12 mm.
Colour : Brown, with pinkish blotches.

(ii) Length : 15 mm.
Breadth : 12 mm.
Colour : Brown with pinkish blotches.

Two nests : (i) Length (i.e., longer diameter) : 49 mm.
Height : 80 mm.
Width (i.e., shorter diameter) : 15 mm.

(ii) Length (i.e., longer diameter): 75 mm.
Height : 102 mm.
Width (i.e., shorter diameter) : 17 mm.

Family NECTARINIDAE

Arachnechthra zeylonica (Linn.)

(=The Purple-rumped Sun bird.)

The purple-rumped Sun bird lays at least twice a year, as eggs have been found both in February and August ,but the breeding season is very variable.

The nests, which are generally attached to the terminal twigs of branches, at heights of from 10 to 30 feet from the ground, are handsome structures resembling hanging purses with the aperture at the top, and, as in *Arachnechthra asiatica,* with a little projecting portico over the doorway. An average-sized nest will measure externally from top to bottom from 5 to 6 inches in length and about 3 inches in diameter. Internally, from the lower edge of the entrance it is about 2 inches deep and about 1½ inches in diameter. The entrance hole is from an inch to 1¼ inches in diameter. The body of the nest is generally chiefly composed of very fine grass or vegetable fibre. The egg chamber is very softly lined with feathers or silky vegetable down, and the exterior profusely ornamented with tiny dry flower buds, scraps of white lichen, dry white leaves, glistening straw and other materials. The nests are always suspended from some slender twig, over which the upper surface of the nest is firmly worked with fibres and vegetable down. Sometimes long pendants of leaves, lichen, etc., hang down from the nest making it appear much longer than it really is. In Madras gardens, this bird seems to be abundant, flitting from flower to flower. It builds a very neat nest of grass, vegetable fibres and sometimes with spiders' web, with a hole at the side near the top overshadowed by a canopy of the same materials, and lays usually two eggs of pale greenish tinge, with small dusky spots.

In Salem district, the breeding season of this bird appears to be August. The nests are suspended at a moderate height from the ground to the branches of thorny Acacias. The nest is made of vegetable fibres, cobwebs and chips of dry wood, and lined with a beautiful soft kind of silk cotton (from a milky bush of the Asclepiadaceae family probably *Calotropis gigantea* which the natives of Southern India call *verkum punjee.*

The normal number of eggs found in the nest is two, but occasionally three have been found. In shape, size and colouring, the eggs bear the closest resemblance to those of *Arachnechthra asiatica.* They are moderately broad, oval eggs, sometimes, however, a great deal elongated, and usually much pointed towards one end ; the egg shell is delicate and close-grained, but almost entriely devoid of gloss. The ground colour varies much. In some eggs it is nearly pure white, but generally it is a dingy greenish or brownish white, much freckled, clouded and streaked with minute greyish brown or brown markings, which commonly form an irregular zone round the larger end and sometimes form a confluent cap. In some eggs, the whole of the rest of the surface beyond the zone or cap is devoid, or almost devoid, of markings. In others, the whole surface of the egg is so closely speckled all over as almost entirely to conceal the ground colour ; the variations in these respects remind one much of similar variations in the eggs of many species of larks. Sometimes the eggs are dingy greensih white, powdered all over with one greyish brown specks, which combine at the large end in forming a dense confluent cap or zone.

The eggs vary in length from 15·2 mm. to 17·8 mm., and in breadth from 10·9 mm. to 12·4 mm. but the average size is 16·5 mm. by 11·9 mm.

Specimens in the collection:

One egg : Length ; 18 mm.
Breadth : 13 mm.
Colour : White with browninish patches.

One nest : Diameter : 60 mm.
Height : 102 mm.

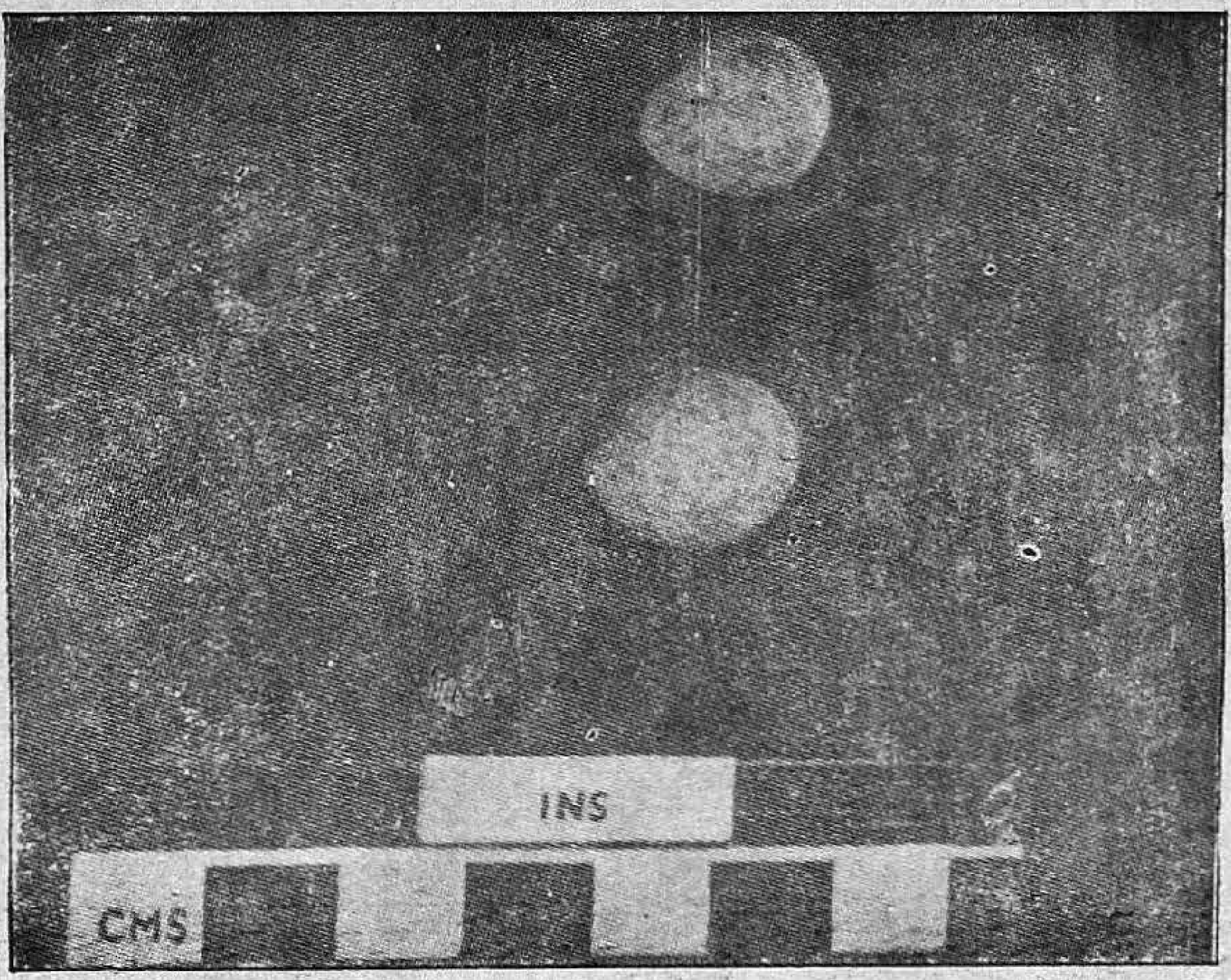

Figure 69. **Arachnechthra lotenia** (Linnaeus)
(Loten's Sun bird)

Arachnechthra lotenia (Linnaeus).

(=Nectarina lotenia hindustanica.)

(Loten's Sun bird)

Very little record is available on the nidification of this species of Sun bird. The nest is said to be beautiful and remarkably long, measuring fully 10 inches. Otherwise it is very similar to that of *Arachnechthra zeylonica* having the entrance near the top protected by a portico. It is constructed of fine fibres and grass, and covered all over with small pieces of bark and other rubbish, chiefly that favourite material with all Sun birds the woody refuse with which wood-boring cater-pillars cover the entrances of their holes.

The egg is not an ornamental one. The ground colour is a dirty brwonish white, the smaller end being thickly covered with dull brown spots, which pass into larger confluent blotches and form a cap on the other end.

The eggs measure, on the average, about 16·5 mm. in length and 10 mm. in breadth.

Specimens in the collection:

Two eggs : (i) Length : 16 mm.
Breadth : 12 mm.
Colour : White, with brown spots.

(ii) Length : 17 mm.
Breadth : 12 mm.
Colour : White, with brown spots.

Family ZOSTEROPIDAE.

Zosterops palpebrosa palpebrosa (Temminck).

(The Indian White Eye).

The Indian White Eye (or White-eyed Tit, as Jerdon terms it), breeds almost throughout the Indian Empire, sparingly in the hotter and more arid plains, abundantly in the Nilgiris and other ranges of the Peninsula to their very summits, and in the Himalayas to an elevation of 5,000 or 6,000 feet.

The breeding season extends in different localities from January to September, but everywhere April is the month in which most eggs are to be found. Sometimes they have two broods. The nest is placed almost indifferently at any elevation. The majority build their nests at low elevations say, between 2 and 6 feet from the ground.

The nest is always a soft, delicate little cup, sometimes very shallow, sometimes very deep, as a rule suspended between two twigs like a miniature Oriole's nest, but on rare occasions is propped in a fork. The nest varies much in size and in the materials with which it is composed.

Fine grass and roots, tow and a variety of vegetable fibres, thread, floss silk and cobwebs are all made use of to bind the little nest together and attach it to the twigs from which it hangs. Again, grass, moss, vegetable fibre, seed-down, silk, cotton, lichen, roots and the like are used in the body of the nest, which is lined with silky down, hair, moss and fern roots, or even silk, while at times tiny, silvery cocoons or scraps of rich coloured lichen are affixed as ornaments to the exterior. The external diameter of the nest is 2½ inches and the depth about 2 inches. The actual egg cavity measures scarcely more than 1½ inches across and very nearly as much in depth, or even less, about, 3/4 inch. In shape, the nest is a perfect hollow hemisphere. As a rule, the nest is built at a considerable height from the ground.

The eggs are two in number. They are somewhat lengthened ovals (occasionally rather broader), and a good deal pointed towards the small end. The egg shell is very fine, but almost glossless ; here and there a somewhat more glossy egg is met with. They are normally of a uniform, very pale blue or greenish blue colour, without any markings whatever, but once in a way, an egg is seen characterised by a cap or zone of a somewhat purer and deeper blue colour. Abnormally large and small specimens are common.

The eggs vary in length from 13·5 mm. to 17·8 mm., and in breadth from 10·7 mm. to 14·7 mm. ; but the average size appears to be 15.7 mm. by 11·9 mm., and the great majority of eggs are really about this size.

Specimens in the collection :
One egg : Colour : White, with brown spots.
The egg is in a damaged condition ; hence the measurements could not be deter nined.

Family ESTRILDIDAE.

Subfamily VIDUINAE.

Munia malacca malacca (Linnaeus).

(=**Lonchura malacca malacca** Linnaeus).

(The Black-headed Munia).

The Black-headed Munia breeds throughout Central and Southern India and Ceylon. The nest is usually placed among reeds in tanks or in the beds of rivers; occasionally it is placed in long grass in the bunds of paddy fields. The nest is rather large, nearly round or oval, neatly but lossely made of grass, with a hole at one side serving as the entrance but very cleverly concealed by the interlacing of the fibres of grass. The nest is usually composed of dry reeds and leaves of some flag-leaved grass very like those of the cholum (*Sorghum vulgare*). The lining is generally composed of the hair-like filaments from the broom grass.

Sometimes the nests are placed in sugar-cane fields. The nest is in the form of an immense ball of dry grass, coarse exteiorly, fine interiorly and round the entrance. The entrance consists of a small hole in the centre of the nest on one side. The nest is rather loosely constructed and is placed amongst, and attached to, the cane leaves in such a manner that it is usually well concealed from view. Sometimes it is suspended from the tops of the sugar cane, but more usually it is supported by the cane leaves from below.

The normal number of eggs appear to be from five to seven, but most nests contain not more than six eggs.

The eggs are of the usual Munia type, dull, pure white somewhat elongated, oval eggs The eggs closely resemble those of the other species of Munias, namely *Munia punctulat* and *Munia malabarica*, but the elongated varieties are more common in the present species *Munia malacca malacca*.

The eggs vary in length from 15·2 mm. to 18·3 mm., and in breadth from 11·2 mm. to 12·7 mm. ; but the average size is reported to be 16·3 mm. by 11·9 mm.

Specimens in the collection :
One egg : Length : 16 mm.
Width : 11 mm.
Colour : White.

One nest : Diameter : 220 mm.
Height : 180 mm.
Diameter of the entrance aperture : 60 mm.

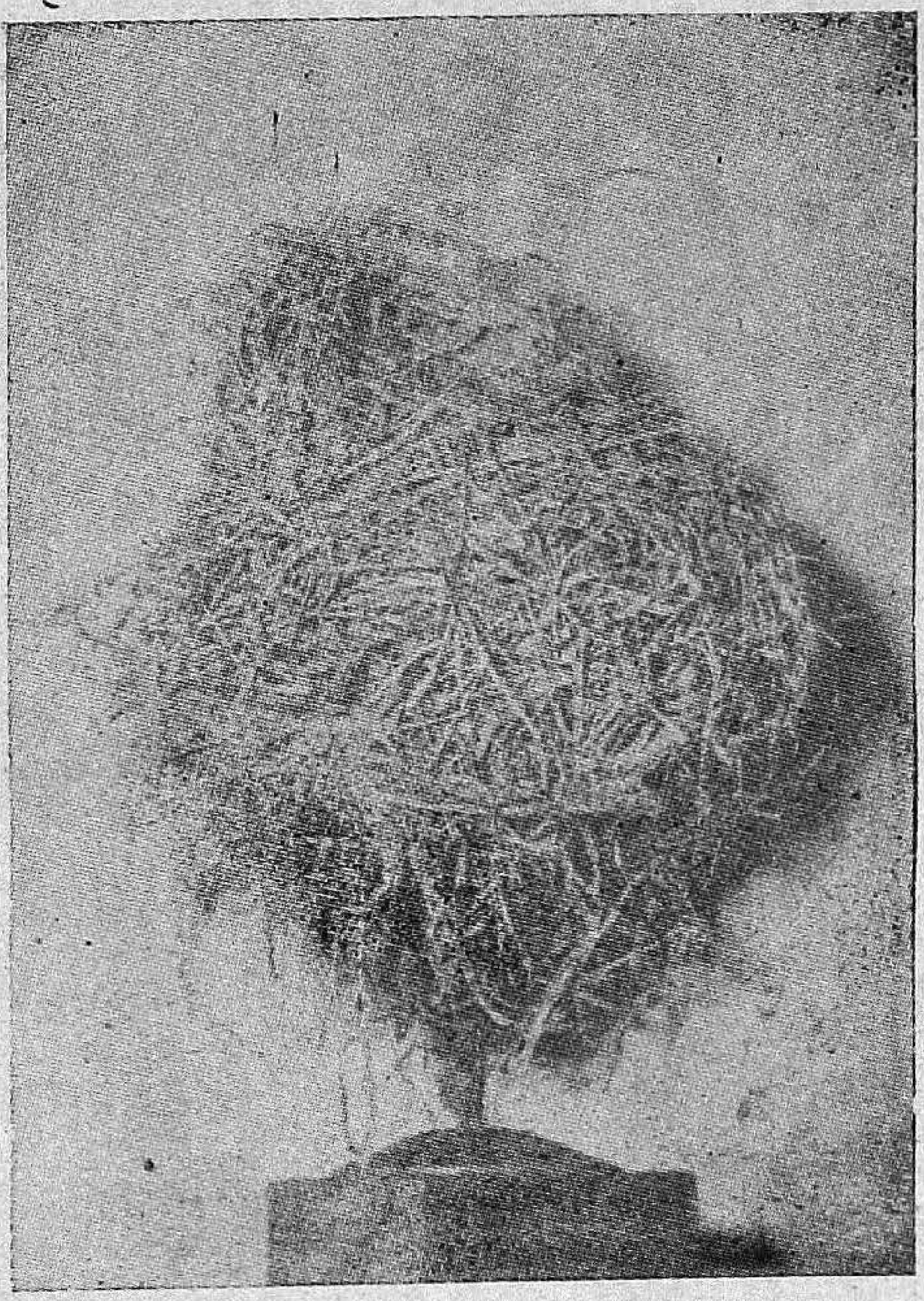

Figure 70. **Munia malacca malacca** (Linnaeus)
(The Black-headed Munia : Nest)

Uroloncha punctulata punctulata (Linnaeus).

(=Lonchura punctulata punctulata Linnaeus).

(The Spotted Munia).

The Spotted Munia breeds throughout India and Burma, alike in the plains and in the hills, up to elevations of from 4,000 to 5,000 feet, but as a rule only in well wooded and watered tracts.

Nests are usually found in July and August both in the plains and in the Himalayas, but in the Nilgiris the breeding season seems to last from February to September.

The nests are, as a rule, placed at heights of from five to seven feet, and very rarely, above twelve feet from the ground, in thick, thorny bushes or trees. In the plains, the various species of Acacias, and in the hills the ber berries, are much resorted to as nesting sites. Occasionally, the nest is placed in very unexpected situations in and about the houses, as among creepers in the verandah trellis or in old thatched roofs.

The nest is globular, very large indeed for the size of the bird, an oblate spheroid as a rule, from 8 to fully 10 inches in diameter and 6 to 7 inches in height. The nest is usually wedged in betweeen some convenient fork, and not uncommonly rests upon a sort of foundation of the same materials as those of which it is itself composed, namely, rather coarse, often broad-bladed grass, used green rice and barley straw, leaves of jowar and the like. The entrance is on one side, circular, about two inches in diameter and neatly lined throughout, together with the whole interior of the cavity, which may average five inches in diameter with fine grass-stems, the beards of the Indian bearded wheat and barley, or rarley, fine, wire-like roots.

The number of eggs laid varies much, but seven appears to be the normal number.

The nest is composed entirely of grass; the entrance is on one side, a small round hole, so small that two fingers can hardly be inserted. In Salem District, the breeding season is August. These birds construct a large, round nest (some 25 inches in circumference with a small, circular hole on one side as an entrance) of the broad leaves of Cholam *H. sorghum*), rice and barley straw, and in some thorny bush or tree, commonly selecting the valum (*Acacia sp.*). The nest is lined with barley beards.

The pair generally lay a thick foundation (as we may call it) of Cholam leaves between the forks of a convenient branch, and then they commence building the proper nest which is of immense size compared to the bird, which is about 5¼ inches in length. It takes them some days, before the nest is properly completed.

The eggs are typically elongated ovals, more or less pointed towards the small end; compared to those of *U. malabarica*, the eggs of *U. punctulata* are more elongated. The eggs are, when fresh, before blowing, a delicate pinky white, the shells as in the case of so many pure white eggs, being partly translucent; when emptied of their contents, the shells are like little balls of snow, pure spotless and glossless dead white, occasionally, as is the case always with similar eggs, more or less discoloured, if inclubation has been at all prolonged.

The eggs vary in length from 14·0 mm. to 19·1 mm., and in breadth from 11·2 mm. to 13·2 mm., but the average of fifty eggs measured is reported to be nearly 16·5 mm. by 11.7mm.

Specimens in the collection :

One nest :	Diameter :	170 mm.
	Height :	180 mm.

Uroloncha malabarica (Linnaeus).

(The White-throated Munia).

The White-throated Munia, like the spotted one, breeds pretty well all over India but the present species affects the more arid tracts.

They have certainly two broods, probably more; the great majority of nests will be found everywhere from January to March and from July to September.

Normally they place their nests in low, thick, thorny bushes at heights of from one foot to five feet from the ground. But they may also be sometimes found in holes in wells, old thatched roofs and amongst dry bushes.

Typically, the nest is large and globular, loosely put together, and composed of fine and coarse, grass, the latter predominating on the outside, the former on the inside, and with more or less fine vegetable down as a lining. But sometimes thay are only partially covered over, sometimes quite open above, and all kinds of adds and ends are not infrequently made use of.

Two pairs of birds frequently, if not usually, are employed in the construction of one nest, in which the two hens consecutively lay, and hence the same nest has sometimes twenty-five eggs in it in differnt stages of incubation. The nest is often clumsily and, hastily made, but the nest is usually a neat, domed structure of fine grass with one opening sometimes prolonged into a short, deflected neck partially closed by the enasticity of the long spikes of grass forming it ; sometimes the nest is a simple platform of grass, open at each end, but he grass ends curve over to meet at the top. The nest is usually placed in thorny bushes, often very conspicuously and close to the roads. Since the eggs of two or three of birds are often found in a single nest, it is difficult to state the regular numl er of eggs laid by a single pair.

The nest of this species is generally a large, loosely constructed structure of fine grass at least on the outside. The lining is of soft, flowering grass, and very neatly laid on in the interior of the nest. The nests are alomost always found supported in the branches of low jungle bushes, sometimes about the middle of the bush,sometimes near the top.The nest is of various shapes and its shape seems to be adopted to the particular situation in which the nest is built. When it could be built conveniently and with reasonable safety, the nest normally assumes an almost gloubular shape, with an entrance hole at one side ; sometime it is open at the top , with the sides, or rather, the grass of the sides curving over. Again some of the nests are of the shape of a hemisphere, with a hollow for the eggs. But whatever shape the nest assumes, the materials of each nest is the same, namely, fine grass outside and the lining of the flowers of grass on the inside.

The eggs are pure white, spotless and devoid of glass. Typically, they are rather broad and perfect ovals, not infrequently more or less pointed towards the small end. Compared with those of *Munia malacca*, *Uroloncha punctulata*, *U. pectoralis* and *U.striata*, the eggs of the present species are slightly smaller and decidedly rounder.

The eggs vary in length from 14·0 mm. to 17·3 mm., and in breadth from 11·4 mm. to 12·7 mm. ; but the average of fifty eggs measured is repoted to be 15·2 mm. by 11·9 mm.

Specimens in the collection :

Two eggs : (i) Length : 16 mm.
Breadth : 12 mm.
Colour : White.

(ii) Length : 16 mm.
Breadth : 12 mm.
Colour : White.

Figure 71. Uroloncha punctulata punctulata Linnaeus
(The Spotted Munia: Nest)

Amandeva amandeva (Linnaeus).

[=Sporaeginthus amandeva (Linnaeus)]

(The Indian Red Munia.)

The Indian Red Munia occurs in Ceylon and all over India up to the Himalayas, except in the Punjab and in Upper Burma as far South as the Upper Chindwin, Cochin China, Siam, Singapore and Java.

This species breeds all over India except in some of the more arid and bare districts. In most localities it breeds twice a year—once from November to February and again from June to August, but in the Nilgiris, which it ascends up to an latitude of 6,000 feet, the breeding season seems to last from May to December. In the Himalayas it seldom breeds at elevations exceeding 2,000 to 3,000 feet.

Although these birds breed most commonly during the two breeding seasons mentioned above, nests may probably be found in any month of the year, but most birds breed after the rains commence in late June and continue up to October. In Assam, Bengal and the wetter portions of their range they freely breed also from March to May.

The nests are oblate-sphaeroid structures, loosley, but not untidily built with fine grass, and lined with fine seed down, the entrance being circular and at one side, perhaps 1½ inches in diameter. Externally the nests vary in diameter from 5 to 7 inches and in height from 4 to 7 inches. The nests are rather small, neat replicas of those of other Munias, made of fine grasses and more neatly finished than most. They do not breed in communities as some Munias do. The nests are generally found in thick, dwarf bushes, very close to the ground, at most at a height of three feet from the ground. For better protection the nest is usually constructed about the centre of the bush from a foot to three feet from the ground.

The eggs are five to ten in number. They are, like those of other species of this family pure white and glossless when blown, more or less pinkish white when first found, owing to the partial translucency of the shell. In shape they are oval, and are very broad, often a good deal pointed towards one end and sometimes towards both ; they are broader ovals than the eggs of the other genera of this sub-family. In size they are considerably smaller than those of any of the Munias, except *Uroloncha acuticauda*.

The eggs vary in length from 13.2 mm. to 15.7 mm., and in breadth from 10.2 mm. to 11.7 mm. ; the average size of one hundred eggs measured is reported to be 14.4 mm. × 11.5 mm. (Baker).

Specimens in the collection :

One egg (in damaged condition) :
Length : 17 mm.
Breadth : 11 mm.
Colour : White.

Family PLOCEIDAE.

Subfamily PLOCEINAE.

Ploceus philippinus philippinus Cuvier.

(= Ploceus baya Blyth).

(The Weaver Bird).

The Baya breeds during the rains according to locality, from April to September. Its long, retort-shaped nest is familiar to every one, and it is indeed a marvel of skill, as elegant in its form as substantial in its structure, and quite weather proof against the heavy rains in the monsoon season.

It is very often suspended from the fronds of some lofty palm tree, either the palmyrah, coconut or date. Sometimes a babool, or other tree will often be selected in preferenec to a palm growing close by. Very often a tree overhanging a river or tank, or even a large well, is chosen, especially if it has spreading branches and scanty foliage.

The nest is frequently made of grass of different kinds plucked when green, sometimes of strips of plantain leaf, and not infrequently of strips from the leaves of the date palm or coconut. The nest varies much in length, both of the upper part or support, and the lower tube or entrance; the support is generally solid from the point whence it is hung for two or three inches, but varies much both in length and strength. When the construction of the structure has advanced to the spot where the birds have determined the egg compartment to be, a strong transverse loop is formed, not in the exact centre but a little at one side. If then taken from the tree and reversed, the nest had the apperance of a basket with its handle ; various authors have described this loop or bar as peculiar to the male or sitting nest, whereas it exists primarily in all, and is simply the point of separation between the real nest and the tubular entrance, and being used as a perch both by the old birds and the young (when grown sufficiently) requires to be very strong. Up to this time both sexes work indiscriminately, but when this loop is completed, the female takes up her seat on it, leaving the male to fetch more fibre and work from the outside of the nest, whilst she works on the inside, drawing in the fibres pushed through by the male and re-inserting them in their proper place and smoothening all carefully. Considerable time is spent in completing this part of the nest, the egg chamber being formed on one side of the loop, and the tubular entrance on the other, after which there appears to be an interval of rest. It is at this stage of the work, from the formation of the loop to the time that the egg compartment is ready, that the lumps of clay are stuck on, about which there are so many conflicting theories.

The original notion, probably derived entirely from the natives, was that he clay was used to stick fire-flies on to light the nest chamber at night.

Layard suggests that the bird uses them to sharpen its bill on.

Burgess states that it serves to strengthen the nest.

But the most probable purpose appears to be that it is used to balance the nest correctly and to prevent its being blown about by the wind.

It is generally believed that the unfinished nests are built by the male for his own special use and that the pieces of clay are more commonly found in such nests than in the complete nests.

Sometimes, in Southern India, these birds construct the nest entirely of coir, these being the handsomest nests made by this species.

The Baya generally lays only two eggs. The eggs. like those of all the others of this group, are of a pure, dead glossless white. They vary a good deal in size and shape but are typically rather long cylindrical or long ovals, a good deal pointed towards the small end Long ovals pointed at both ends and blunt pyriform varieties are also common.

The eggs vary in length from 18.3 mm. to 22.9 mm., and in breadth from 13.2 mm. 5 1.7 mm. ; but the average size of forty eggs is reported to be 20.8 mm. by 15.0 mm.

Stpecimens in the collection :

Two eggs : (i) Length : 21 mm.
Breadth : 15 mm.
Colour : White, with brownish spots.

(ii) Length : 22 mm.
Breadth : 15 mm.
Colour : White, with brownish dots.

Figure 72. **Ploceus philippinus philippinus** Cuvier
(The Weaver Bird : Nests)

Nine nests : (i) Length : 550 mm.
Diameter : 90 mm.

(ii) Length : 500 mm.
Diameter : 85 mm.

(iii) Length : 600 mm.
Diameter : 170 mm.

(iv) Length : 300 mm.
Diameter : 130 mm.

(v) Length : 560 mm.
Diameter : 130 mm.

(vi) Length : 200 mm.
Diameter : 160 mm.

(vii) Length : 330 mm.
Diameter : 120 mm.

(viii) Length : 560 mm.
Diameter : 140 mm.

(ix) Length : 450 mm.
Diameter : 150 mm.

(NOTE :—In the above measurements of the Weaver bird's nests, the length denotes the total length from the point of attachment to the lower extreme tip of the nest, and the diameter denotes the width or thickness at the place where the nest is thickest or broadest.)

Ploceus manyar flaviceps (Lesson).

(The Madras Streaked or Striated Weaver Bird).

This species occurs in Ceylon and South India as far north as Bombay, the Deccan and South Orissa.

In Ceylon, this Weaver Bird breeds principally in February and March, and sometimes a second time in August and September. In India it breeds as soon as the rains have commenced, i.e., from the middle of June to the end of September.

The nests very much resemble those of the Common Weaver Bird or Baya (*Ploceus philippinus*). The nests are made of the same materials and woven in the same manner, but the upper or body portions are more massive and clumsier, and the tubes are shorter. The nests are found only where there are ponds, tanks or rivers whose banks are fringed with reed and rush. The nests are built in long grass or reeds standing in mud or water. The points of some forty or fifty narrow bulrush leaves are commonly gathered together and incorporated into the upper portion of the nest to form a point of suspension. The true nest, exclusive of the tubular or entrance passage, averages about 7½ inches in length externally, with a diameter of 5 inches one way and 4 inches the other way. The tube is from 2 to 4 inches in length and about 2½ inches in external diameter. The upper portion of the nest may be about 1¼ inch thick, but the sides average about half an inch, and the entrance passage is scarcely one-fourth of an inch thick. What gives the nest a clumsy apperance is that the upper end of the nest terminates squarely instead of tapering more or less to a point, as is almost always the case in those of *Ploceus baya* ; but the nests of the latter species are hung from one point of support while the nests of the Striated Weaver Bird (*Ploceus manyar flaviceps*) are suspended from a whole clump or cluster of supports. The nests occur in colonies, but the colonies are generally small, rarely numbering more than forty or fifty pairs.

The eggs number two or three, two being the usual number in Ceylon and Travancore. They cannot be distinguished from the eggs of other species of *Ploceus*. However, the eggs of this species seem to average sightly smaller than these of *Ploceus baya*, but in every other respect, they are precisely similar - moderately broad ovals, a good deal pointed at one end, and of a perfectly pure, almost entirely glossless white. The texture is very fine and compact, and the shells, though thin, are firm and strong.

The eggs vary in length from 18.0 mm. to 22.4 mm., and in breadth from 12.7 mm. to 15.2 mm ; the average size of fifty eggs measured is reported to be 20.3 mm. × 14.3 mm. (Baker).

Specimens in the collection :

One egg : Length : 21 mm.
Breadth : 15 mm.
Colour : White.

Passer domesticus Linnaeus.

(The House Sparrow).

The House Sparrow builds its nest in all sorts of places in and around human dwellings. Their nests are shapeless, bundles of straw, grass, rags, wool or anything else they can find, thickly lined with feathers, stuffed into any holes or crevices about huts, houses walls, old wells, etc., that they can find, though rarely, into the centre of some thick bush. They lay five or six eggs, sometimes even more, and have two or more broods during the year. The breeding season varies somewhat, but February to May appears to be the most usual breeding season.

The eggs exactly resemble those of the English House Sparrow, but probably of a slightly smaller average size. They are typically somewhat elongated ovals and but little pointed, but as in all other species varieties occur, and broad, oval eggs as well as pointed and pyriform ones are often met with. The ground colour is either greenish, greyish or yellowish white., or sometimes a pale stone colour. The markings are most commonly close frecklings, fine striae or smudgy streaks; but in a certain number of eggs the markings are spots, specks and blotches pretty sharply defined. The colour of the markings varies; it is sometimes sepia, sometimes olive, sometimes yellowish and sometimes purplish brown ; whichever shade it be, it is generally dull and dingy ; and besides these primary markings, many eggs exhibit pale, inky purple secondary clouds and spots which seem to underlie the brown markings. As a rule, the eggs have very little gloss, but here and there somewhat more glossy eggs may be met with. In more or less half the number of eggs, there is a more or less marked tendency to form a blotchy, mottled, ill defined cap at the large end, and in some eggs this is very conspicuous. Almost every clutch contains at least two distinct varieties—a very light one and a very dark one.

The eggs vary very much in size, in length from 15·2 mm. to 22·4 mm., and in breadth from 14·7 mm. to 16·5 mm.; the average size of fifty-seven eggs measured is reported to be 20·6 mm. × 15·2 mm.

Specimens in the collection :

Two eggs : (i) Length : 21 mm.
Breadth : 16 mm.
Colour : White, with blackish dots.

(ii) Length : 20 mm.
Breadth : 16 mm.
Colour : White, with blackish dots.

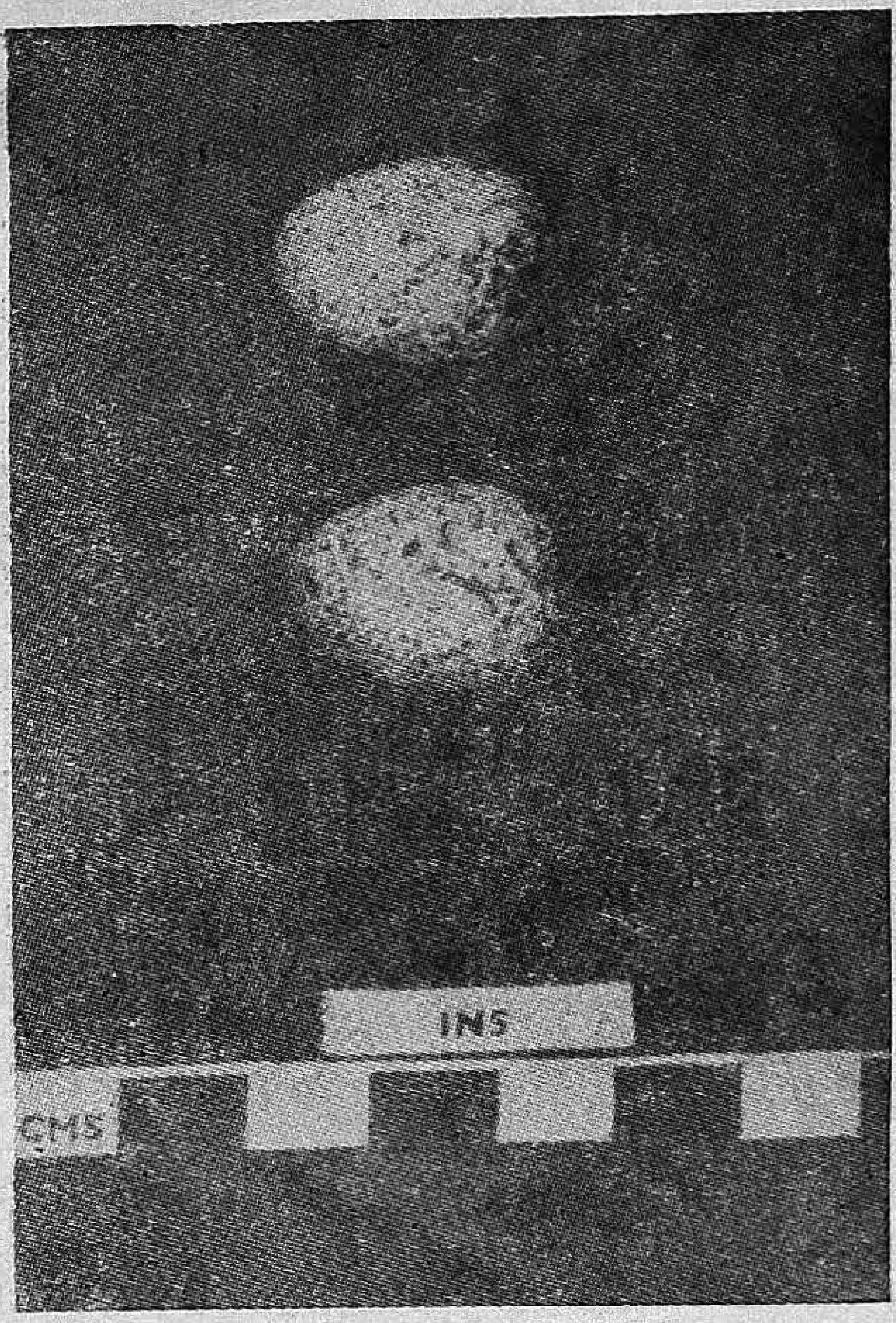

Figure 73. **Passer domesticus** Linnaeus
(The House Sparrow)

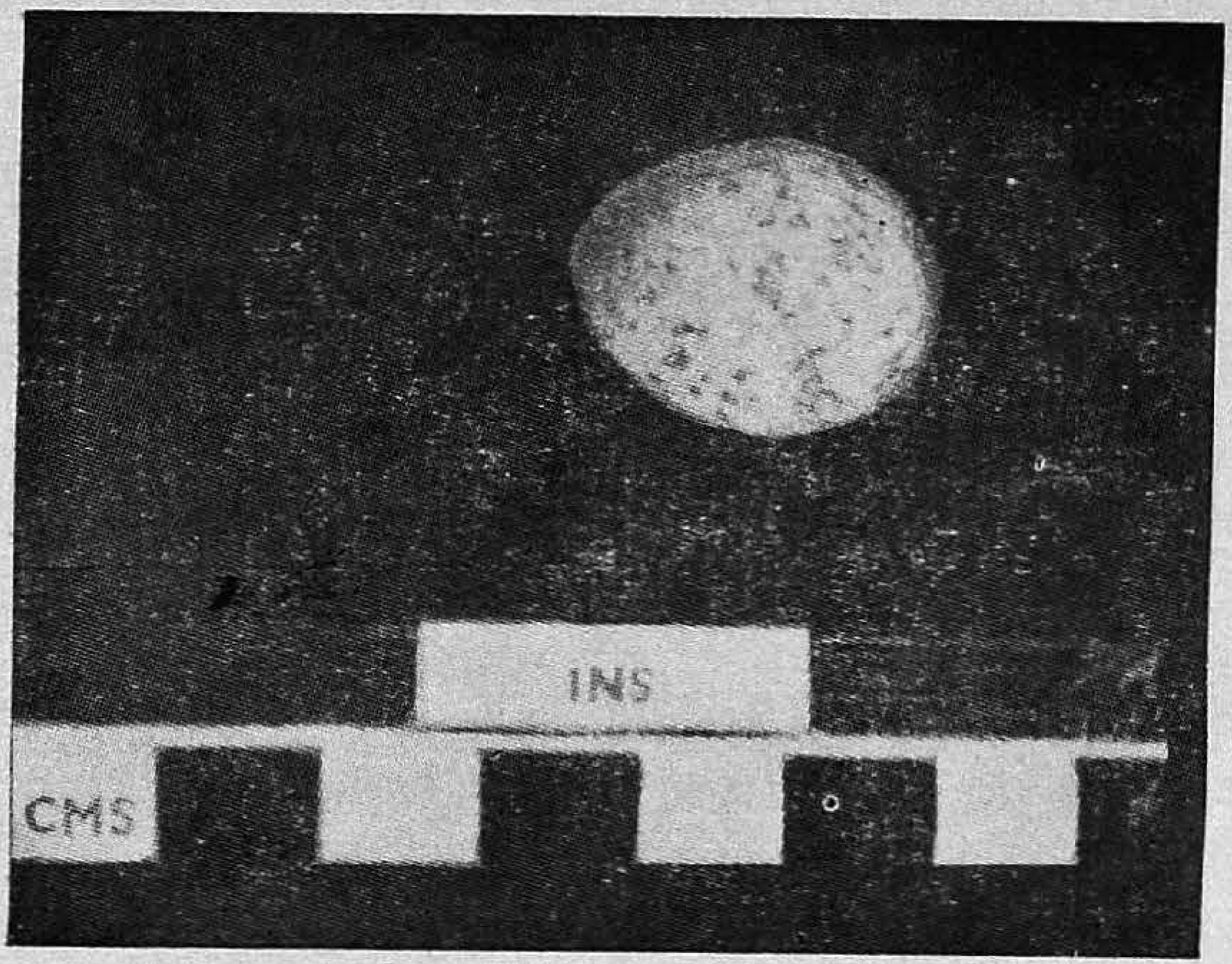

Figure 74. **Gymnornis xanthocollis xanthocollis** Burton
(The Yellow-throated Sparrow)

Gymnornis xanthocollis xanthocollis Burton.

(Petronia xanthocollis xanthocollis (Burton).

(The Yellow throated Sparrow).

This species breeds principally in April throughout its range, but continues through May and sometimes into June. The nests are made of grass, but the grass is often mixed with leaves, wool, hair, fur or other material, through the lining seems to be always composed of feathers. The nests are generally placed in holes of trees, either natural or excavated by woodpeckers and barbets.

The eggs are normally three or four in number and are like small eggs of the House Sparrow. The ground colour is white, greenish white or yellowish white, profusely marked all over with smudges, blotches, spots and longitudinal streaks of dull brown, grey brown or sepia. Most eggs are covered with markings profusely all over, but some eggs are more sparingly and boldly marked. Eggs in the same clutch often vary greatly. As a whole they are rather glossless, dingy eggs.

The average size of one hundred eggs measured is reported to be 19·0 mm. × 139 mm. The largest eggs measure about 21·1 mm. × 14·2 mm.

Specimens in the collection :

One egg : Length : 22 mm.
Breadth : 16 mm.
Colour : White, with blackish patches.

Family STURNIDAE.

Sturnia malabaricus malabaricus Linnaeus.

(The Grey-headed Myna).

The Grey-headed Myna occurs throughout India, except the north-western part beyond the region extending from Mount Abu to Dehra Dun. In the South it occurs as a straggler in Mysore, but does not seem to breed in the Malabar Coast south of Belgaum.

This species breeds from April to June from the plains upto an elevation of about 5,000 feet. The nest is placed in small holes in trees at heights varying from 10 to 40 feet from the ground. The hole is often enlarged or altered to suit the purpose.

The nest is a rather crude structure and is often in the shape of a shallow pad of fine twigs with long strips of barks intermingled in the base of the structure and thinly lined with fine grass stems. Sometimes the nest is composed only of a few leaves and a little grass, but sometimes it is in the form of a well made pad composed of the same material.

The eggs are from three to five in number and vary a good deal in shape. Typically, they are most often rather long, pointed ovals ; however, some are broad and some are elongated ovals, but all are more or less pointed towards the small end. The shell is delicate and rather glossy and is pale blue or pale bluish sea-green in colour and without markings of any kind.

The eggs vary in legth from 22·6 mm. to 25·4 mm., and in breadth from 17·5 mm. to 18·3 mm. The average size of forty eggs measured is reported to be 23·4 mm. × 18·1 mm. (Sturat Baker).

Specimens in the collection;

One egg ; Length : 30 mm.
Breadth: 20 mm.
Colour : Pale blue.

Sturnus pagodorum Linnaeus.

(= Temenuchus pagodorum).

(The Black-headed Myna).

The Black-headed Myna breeds throughout the more open, dry and well wooded or cultivated portions of India. It nests exclusively in holes in trees in North India and around Madras, it breeds about large buildings, pagodas, houses, etc.

The hole is thinly lined with a few dead leaves, straw, a little grass and a few feathers, and occasionally with a few small scrapes of some other soft material. The holes are usually at heights of from 12 to 15 feet from the ground, and are found generally in mango, tamarind and high-growing *Jamun* trees. The entrance to the holes in most instances are only large enough for the bird to pass through. In some cases there was no lining at all except wood dust, in others a small quantity of dry grass and a few feathers. The average height of the holes from the ground is about 8 to 10 feet ; some nests are, however, found at a height of not more than 4 or 5 feet from the ground.

The normal number of eggs appears to be three to five. Five is the greatest number of eggs found in any hole.

The eggs are pale bluish, and are glossy and spotless. The eggs, however, vary from very pale bluish white to pale blue or greenish blue.

The eggs also vary in length from 21·8 mm. to 29·2 mm., and in breadth from 16·8 mm. to 20·3 mm. ; the average size is about 24·6 mm. by 19·1 mm.

Specimens in the collection :

Two eggs : (i) Length : 25 mm.
Breadth : 18 mm.
Colour : Pale bluish white.

(ii) Length : 25 mm.
Breadth : 20 mm.
Colour : Pale bluish white.

One nest : Diameter : 140 mm.
Height : 40 mm.

Acridotheres tristis tristis (Linnaeus).

(The Common Myna).

The Common Myna breeds throughout India, both in the plains and in the hills. They are very domestic, birds, become easily tame and generally frequent the habitations of man and their immediate neighbourhood. They build their nests in roofs of houses, holes in walls, trees and even old wells, in earthern pots, and, though very rarely, once in a way on the branches of trees.

But some observers have noticed that this species frequently lays in cup-shaped nests of sticks placed in trees, like small crows' nests. However, leaving aside exceptional cases like these the nest is essentially a shapeless but warm lining to the hole, composed chiefly of straw and feathers, but in which fine twigs, bits of cotton, strips of rags, bits of old rope and all kinds of odds and ends may at times be found incorporated.

They normally lay about four or five eggs.

The eggs of this species are larger than those of either the pied Myna, *Sturnopastor contra*, or the Bank Myna, *Acridotheres ginginiatus*, but in other respects they resemble these eggs greatly, but when fresh, they are, on the whole, of a slightly darker colour. The eggs of the Common Myna rather long, oval, often pear-shaped, spotless and brilliantly glossy, varying from very pale blue to pure sky blue or greenish blue.

The eggs vary in length from 26·7 mm. to 32·5 mm., and in breadth from 20·3 mm. to 24·1 mm.; but the average size of ninety-seven eggs measured is reported to be 30·2 mm. by 21·8 mm.

Specimens in the collection :

One egg : Length : 27 mm.
Breadth : 22 mm.
Colour : Pale blue.

Acridotheres ginginiatus (Latham).

(The Bank Myna.)

The Bank Myna breeds throughout the North West Provinces and Oudh, Bihar and Central Bengal, the greater portion of Madhya Pradesh and the Punjab and Sindh.

The Bank Myna builds its nest exclusively in earthern banks and cliffs, in holes which it excavates for itself, almost always in close proximity to water, and by preference in places overhanging or overlooking water.

The breeding season lasts from the middle of April to the middle of July. Four is the usual number of eggs, but occasionally five eggs are laid.

The Bank Myna nests in holes which are excavated in the face of sand banks. The excavations are fairly deep, often about 10 feet in depth and the holes are all connected with each other. This species nests in colonies and the nests of several birds are found together excavated in the same sand bank and inter-connected with each other so that apparently every Myna belonging to the particular colony could get into or out from its nest by any one of the numerous holes in the face of the excavation. The holes are about three inches in diameter and lead into a tunnel which twists and turns up and down and right and left in a tortuous manner; each hole terminates in a more or less well developd chamber the egg chamber, situated from 4 to 7 feet from the face of the banks. The egg chamber, is lined with a loose nests of grass roots, a few feathers and, in many instances pieces of snake skins.

In the majority of these terminal egg chambers, four eggs are normally found.

The eggs vary much in shape and number. In some nests as many as five eggs are found, while in others, only two or three are found. In colour, they closely resemble the eggs of *Acridotheres tristis*, but they are slightly smaller, the tint is of a decidedly deeper shade, and the shell more glossy.

The eggs are typically shorter and proportionately broader than those of other related species already described; very pyriform varieties, however, are common. They are as usual spotless, very glossy, and of different shades of very pale sky blue and greenish blue. Although, when a large series of the eggs of this and each of the two preceding species are grouped together, a certain difference is observable, individual eggs can by no means be discriminated, and it is only by taking the eggs with one's own hand that one can feel certain of ther identity.

The eggs vary in length from 24·1 mm. to 29·5 mm., and in breadth from 18·3 mm. to 22·1 mm. but the average size of forty-seven eggs measured is reported to be 26·7 mm. by 20·8 mm.

Specimens in the collection :

Three eggs : (i) Length : 27 mm.
Breadth : 20 mm.
Colour : Pale bluish white.

(ii) Length : 27 mm.
Breadth : 21 mm.
Colour : Pale bluish white.

(iii) Length : 27 mm.
Breadth : 21 mm.
Colour : Pale bluish white.

Acridotheres fuscus fuscus Wagler.

=Aethiospar fuscus fuscus (Wagler).]

(The Jungle Myna.)

The Jungle Myna breeds throughout the Himalayas, at any elevations up to 7,000 feet, where the hills are not bare, and in some places in the Sub-Himalayan Jungles. It breeds in the plains country of Lower Bengal, and in both plains and hills of Assam, Cachar and Burma, and also in great numbers in the Nilgiris, and all the wooded ranges and hill country of the Peninsula. The breeding season lasts from March to July, but the majority lay in April, except in the extreme north-west, where they lay later.

Normally, they build their nests in holes of trees and are more or less social in their nidification. As a rule, if one nest is found, usually a dozen will be found within a radius of a hundred yards and not infrequently even within a radius of ten yards. But, besides trees, they readily build in holes in temples and old ruins, in any large stone wall, in the thatch of old houses, and even in their chimneys.

The nest consists of a mere lining for the hole they select, and varies in size and shape with the latter. Fine twigs, dry grasses and feathers are the materials most commonly used, the feathers being chiefly gathered together to form a bed for the eggs; but moss and fern roots and pieces of lichen and down may often be found in greater or less quantities, intermingled with the grass and straw which forms the main body, or with the feathers that form the lining, of the nest.

Normally, three to five eggs are laid, but occasionally six eggs are also noticed.

The eggs of this species approximate closer to those of *Acridothers tristis* than to those of *A. ginginiatus*. They are rather long ovals, somewhat pointed usually, but often pyriform. They are perhaps, as a rule, somewhat paler than those of either of the above mentioned species, and are of the usual, spotless, glossy type, varying in colour from that of skimmed milk to pale blue or greenish blue. Typically, they are proportionately more elongated and attenuated than those either of *A. tristis* or of *A. ginginiatus* or of *Sturnopastor contra*.

In the Nilgiris, the Jungle Myna's eggs may be found at any time from the end of February to the beginning of July. In the Nilgiris, they nest in chimneys, hollow trees, holes in stone walls, etc., filling in the hole with hay, straw, moss and twigs and lining the cavity with feathers. They lay from three to five, long, oval, greenish-blue eggs, a shade darker than those of the English Starling. The hole of the tree trunk is filled up with sticks to

within about a foot of the entrance, and a smooth lining of paper, rags, feathers, etc., laid down, on which are deposited from two to six slight blue eggs. The diameter of the entrance hole is about 2½ inches and inside it widens to six inches and about 20 inches in depth. The intorior lining consists of a mere pad of grass and feathers.

The eggs vary in length from 26·2 mm. to 33.3 mm. in length, and from 19.8 mm. to 22·9 mm. in breadth. The average size of forty eggs measured is reported to be 30·2 mm. by 21·1 mm.

Specimens in the collection :

One egg :	Length :	30 mm.
	Breadth :	21 mm.
	Colour :	Pale blue.

Sturnopastor contra (Linnaeus).

(The Pied Myna.)

The Pied Pastor, or Myna, breeds throughout the North-western Provinces and Oudh, Bengal, the Eastern portions of the Punjab and Rajasthan, Madhya Pradesh and Central India.

The breeding season lasts from May to August , but the majority of the birds lay in June and July. It builds its nest in trees at heights of from 10 to 30 feet, usually near the extermities of lateral branches, constructing a huge, clumsy nest of straw,grass, twigs, roots and rags, with a deep cavity lined as a rule with large quantities of feathers. Occasionally, but very rarely, it places its nest in some huge hole in a great arm of a mango tree.

The nest is usually a shapeless mass of rubbish, loosely put together, rough and rugged.

The nest is composed chiefly of dry grass, but with a few twigs, many feathers and a strip or two of rags intermingled in the mass. The materials are loosely put together, and the nest placed high up in forks near the extremity of a branch. In the centre there is a deep, well-like cavity at the bottom of which the eggs are placed.

The nest is, as a rule, roughly made, though some skill is evinced in putting together all the materials of which it is composed, such as twigs, grass, rags, feathers, etc.

The eggs are typically moderately broad ovals, a good deal pointed towards one end, but pyriform and elongated examples occur. Like those of all the members of this subfamily, the eggs are blue, spotless and commonly brilliantly glossy. In shade they vary from a delicate bluish white to a pure, though somewhat pale, sky-blue, and not uncommonly are more or less tinged with green.

The eggs vary in length from 24·1 mm. to 31·8 mm., and in breadth from 19·1 mm. to 22·9 mm., ; but the average size of one hundred eggs measured is reported to be 28·2 mm. by 20·8 mm. approximately.

Specimens in the collection :

One egg :	Length :	26 mm.
	Width :	20 mm.
	Colour :	Pale blue

Family ORIOLIDAE.

Oriolous oriolus kundoo Sykes.

(The Indian Oriole.)

The Indian Oriole breeds from May to August (the great majority, however, laying in June and July) almost throughout the plains of India and in the lower ranges of the Himalayas up to an elevation of 4,000 feet.

The nest is placed on some large tree. It is in the form of a moderately deep purse or pocket, suspended between some slender fork towards the extremity of one of the higher boughs. From below it looks like a round ball of grass wedged into the fork, and the sitting bird is completely hidden within it. Some nests contain no extraneous matters, but others have all kinds of odds and ends - scarps of newspaper or cloth, shavings, rags, snake skins, thread, etc., — interwoven in the exterior. The interior is always neatly lined with fine grass stems.

Very commonly, the bird so selects the site for its nest that the leaves of the twigs it uses as a framework form more or less a shady canopy overhead. The nests vary a good deal in size. Some have the internal cavity 3½ inches in diameter and the depth over 2½ inches, while others are scarcely over 2½ inches in diameter and less than 2 inches in depth. As a rule, the purse-shaped nest is strong and compact, the material closely matted and firmly bound together.

The nest is usually made on large trees and almost always suspended between the fork of a branch. Tamarind tree is usually preferred by this species for making its nest. The nest is cup-shaped, light, neat and compact. The average outer diameter of the nest is 4·8 inches and that of the inner or cup-like cavity is about 3·6 inches. Hemp-like fibre is almost exclusively used in the exterior structure of the nest, and by this it is firmly secured to the two limbs of the fork. The hemp is wrapped well round the stems and then brought again into the outer framework of the nest. Occasionally, bits of cloth, thread, pieces of vegetable fibres, etc., are introduced. The lining of the egg cavity is made up normally of fine grass, but occasionally a feather or a piece of cotton rag is added.

Three appears to be the normal number of eggs, but four is the maximum number.

The eggs are typically a moderately elongated oval, tapering a good deal towards one end, but they vary much in shape as well as in size. Some are pyriform, and some very long and cylindrical, somewhat shaped like the egg of a Cormorant. They are always of of pure, excessively glassy, China-white colour, which, when fresh and unblown, appears suffused with a delicate salmon pink, caused by the partial translucency of the shell. Well defined spots and specks, typically black, are more or less thinly sprinkled over the surface of the egg, chiefly at the large end. Normally, the spots are black and sharply defined and there are neither blotches nor spashes, but numerous variations occur. Some, times all the spots are pale yellowish brown, while sometimes a few spots of this colour are mingled with the black ones. Deep reddish brown often takes the place of the typical black, and the spots are not infrequently surrounded by a more or less extensive brownish pink nimbus, which is sometimes so extensive that the ground colour of the whole of the larger end appears to be a delicate pink. Occasionally several of the clear-cut spots appear to run together and form a coarse irregular blotch. The eggs, as a whole closely resemble those of the Golden Oriole, to which the bird itself is so nearly related. Greatly elongated specimens are common among the eggs of both these species.

The eggs vary in length from 26·2 mm. to 32·5 mm., and from 19·1 mm. to 22·1 mm. in breadth ; but the average size appears to be 28·2 mm. by 20·6 mm.

Specimens in the collection ;

Two eggs : (i) Length: 27 mm.
Breadth : 20 mm.
Colour : White, with black and greenish dots.
(ii) Length : 29 mm.
Breadth : 20 mm.
Colour : White, with black and greenish dots.

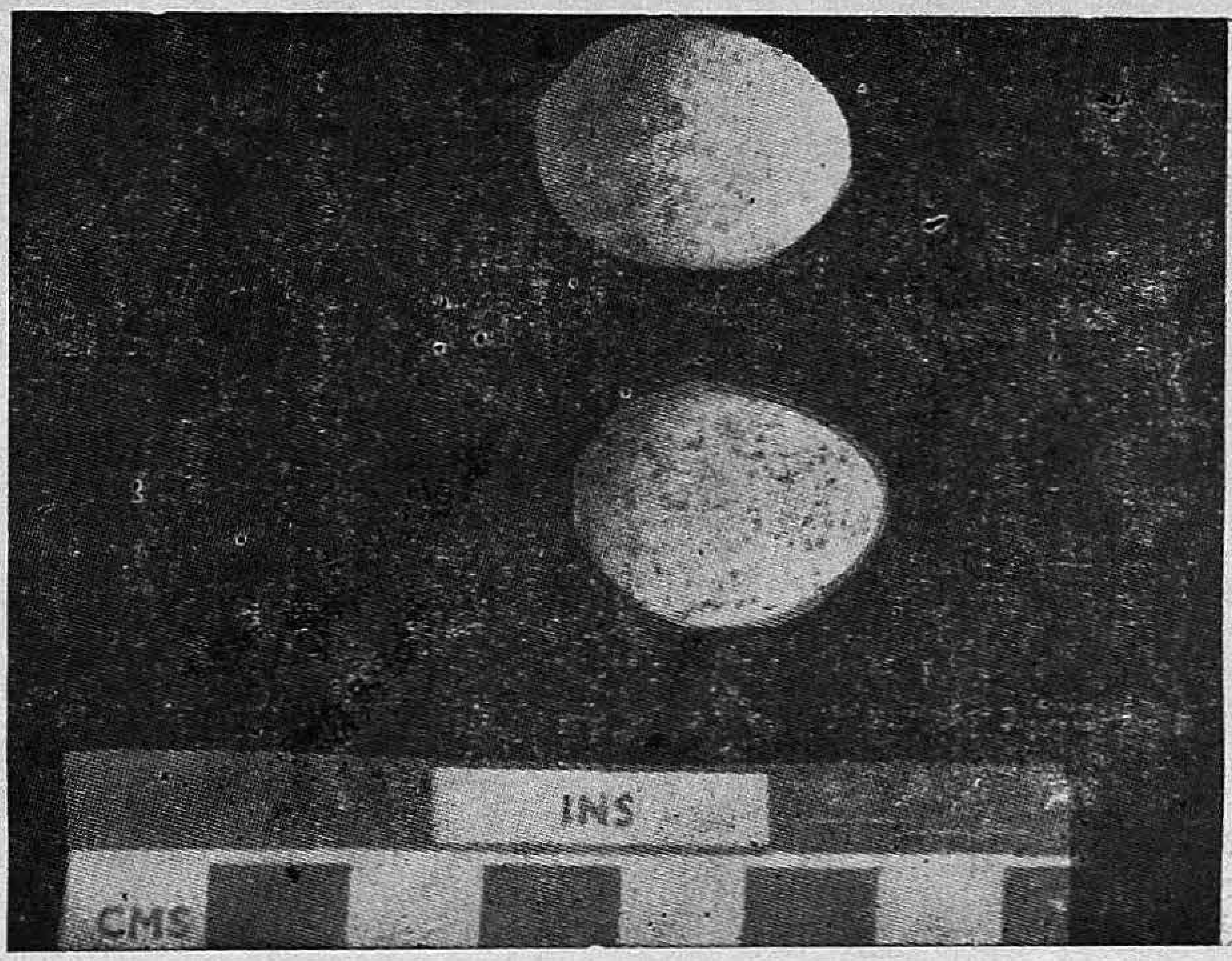

Figure 75. **Oriolus oriolus kundoo** Sykes
(The Indian Oriole)

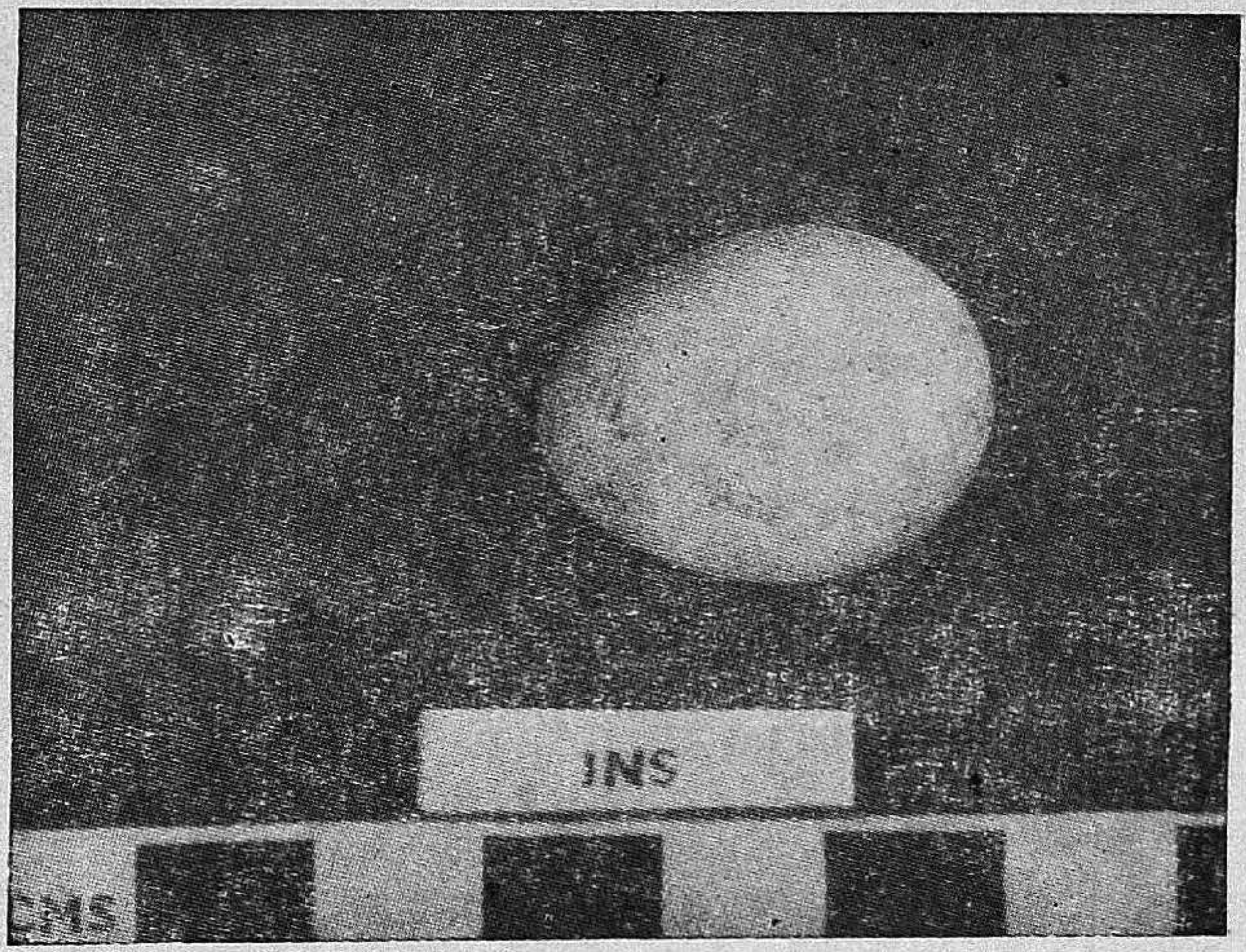

Figure 76. Dicrurus coerulescens coerulescens (Linnaeus)
(The White-bellied Drongo)

Family DICRURIDAE.

Dicrurus coerulescens coerulescens (Linnaeus).

(The White-bellied Drongo).

The White-bellied Drongo occurs throughout India from the extreme South to Cutch on the West Coast and thence north to Garhwal, but not west and north of this. On the east, its distribution extends to West Bengal and Bihar and between these points it ascends the Himalayas to an altitude of about 6,000 feet.

In the Himalayas, the breeding habitat of this species is from 2,500 to 6,000 feet. It is common in the South-eastern slopes of Nainital. It breed from the foot-hills and broken ground adjoining them up to at least 6,000 feet and perhaps 1,000 feet higher. It lays principally during April, May and June, and, as a rule, keeps to heavily wooded country and to forest.

The nest is shallow and cup-shaped and is of the usual type made by species of Drongos, although it is perhaps rather larger and stronger than those of the species of Drongos in proportion to its size. The materials consist principally of roots and grasses and the nests are usually placed in some little fork of a branch near the top of a moderate-sized oak tree or they are attached to the outer branches of small or medium-sized trees.

The eggs number two or three and are typical small Drongo eggs, varying in ground colour from the palest cream or yellowish salmon to a warm salmon, the markings varying almost as much as in the Black Drongos.

The average size of thirty eggs is reported to be 23·2 mm. × 17·5 mm. (Baker).

Specimens in the collection :

One egg : Length : 22 mm.
Breadth : 16 mm.
Colour : Brownwish white.

One nest : Diameter : 75 mm.
Height : 50 mm.

Dicrurus leucophaeus longicaudatus (A. Hay.)

(=Dicrurus longicaudatus A. Hay).

(The Indian Ashy or Grey Drongo).

This species occurs throughout India west and south of the range of distribution of the Himalayan Grey Drongo (i.e., west and south of Assam, Nepal and the Brahmaputra Valley), and its distribution extends perhaps to the extreme south of Travancore (Kerala). However, it does not appear to occur in the South-Eastern and East Central parts of India.

The Grey Drongo breeds throughout its habitat from the level of the plains up to an altitude of at least 7,000 feet. The greater number of plains' birds seem, however, to move to the nearest plateaux and hills to nest. The breeding season is principally during May and June, but a few birds may lay earlier or later.

These birds build their nests generally in larger trees at considerable height from the ground placing their somewhat shallow, cup-shaped nests in some slender fork towards the summit or exterior of the tree.

The nest is a shallow saucer-shaped structure measuring externally about 4 inches in diameter and 1½ to 2 inches in depth, while internally the cup is about ¾ inch less each way. The nest is neatly and firmly built and is composed of grass stems, slender twigs, grass roots, weed stems and other materials closely and compactly interwoven and externally bound together with cobwebs in which lichens are also intermixed. The nests are well made, though the materials are often scanty, being strongly reinforced with ample spiders' webs. Occasionally the nests are decorated outside with a few scraps of moss, lichens or spiders' egg bags.

The nest is almost always placed on a slender branch on the top or outside of a tree. It may be placed either on a horizontal fork or on the top of one or more small branches and is very rarely to be seen in an upright fork or on a stout branch. The height at which the nest is placed varies greatly and may range from two feet to fifty feet from the ground.

The eggs are three or four in number, and are very handsome. They range from pure spotless white to deep salmon or buffy pink and the markings range from a few black pin-points to profuse chestnut, reddish brown, purplish brown or yellowish brown blotches. As a rule, they are more numerous and more of the nature of blotches rather than spots as in the Black Drongo's eggs.

In shape, the eggs are moderately broad, or, at most, somewhat elongated ovals, very little depressed at the smaller end. The eggs are comparatively devoid of gloss, but their texture is smooth and fairly fine.

The eggs vary in length from 21·6 mm. to 25.7 mm. in length and in breadth from 17·8 mm. to 19·1 mm.; the average size of two hundred eggs measured is reported to be 23·6 mm. × 18.2 mm. (Baker).

Specimens in the collection :

One egg: Length : 25 mm.
Breadth : 19 mm.
Colour : White with greyish spots.

Dicrurus aeneus aeneus Vieillot.

[=**Chaptia aenea aenea (Vieillot).**]

(The Northern Bronzed Drongo).

The Northern Bronzed Drongo occurs in the Himalayas from Mussoorie in the West to Eastern Assam and North-East Bengal, Manipur, Chin and Kachin Hills and to Hainan in Upper Burma. It has also been recorded from Saigon.

This species begins to lay in March, and the breeding season extends over April, May and June. It builds a broad, somewhat saucer-shaped nest some four or five inches in width and two to three inches in depth externally. It is quite typical of the family, but smaller than that of species of *Dicrurus*. The nest is placed in some slender horizontal forks of branches on the outside or at the top of trees standing either in forest or well wooded country at any height between ten and forty feet from the ground. The nest is attached firmly to at least one of the twigs forming the fork of branches by vegetables fibres; the nest is composed of fine twigs and grass and bound round with cobwebs in which pieces of lichen and small cocoons are often intermingled.

The eggs number two to four. They are moderately elongated ovals, in some cases slightly pyriform, in others somewhat pointed towards the small end. The egg shell is fine and compact, smooth and silky to the touch, but they have but little gloss. The most common type of egg is one with a rather deep salmon-pink ground colour, faintly marked in a ring or cap with deeper reddish pink. The ground colour varies from a pale pinkish fawn to a pale salmon pink, and they exhibit round the large end a feeble, more or less

imperfect and irregular zone of darker coloured, cloudy spots, in some cases reddish and in some rather inclining to purple, which zone is more or less engulfed in a haze of the same colour, but slightly darker than the rest of the ground colour of the egg. A few eggs are more boldly blotched and spotted with reddish brown.

The eggs vary in length from 19·3 mm. to 22·4 mm., and in breadth from 15·2 mm. to 16.3 mm. The average size of one hundred eggs measured is reported to be 21·1 mm. x 16·1 mm (Baker).

Specimens in the collection :

One egg : Length : 22 mm.
Breadth : 16 mm.
Colour : Pale brownish white.

Dicrurus paradiseus paradiseus Vieillot.

[=**Dissemurus paradiseus paradiseus (Vieillot).**]

(The Larger Racket-tailed Drongo.)

The nest is rather a large structure of twigs and roots, and the eggs, usually three in number, are pinkish white, with claret-coloured or purple spots, but they vary a great deal in size, form and colouring. They breed in April and May.

The nest is a shallow cradle made of grass, and the whole of it lies below the fork to which it is attached. It is made entirely of small branches of weeds and creepers, finer as they approach the interior. The egg cavity is generally, but not always, lined with dry grass.

The external dimensions of the nest are about six inches in diameter and three inches in depth. The interior of the cavity measures about four inches by two inches.

The eggs of this species are typically rather long ovals, generally a good deal pointed towards the small end. They are dull eggs and have very little or no gloss. The ground colour varies from white to a rich warm pink. The markings are of all sizes and shapes, from large blotches to the tiniest specks, and they vary in every egg, being thickly set in some, thinly in others, but as a rule, the largest and most conspicuous markings are towards the large end. Again, in colour, the markings vary very much; they are red, purplish red, reddish brown, pale purple and inky grey; generally the eggs exhibit both coloured markings—reddish and lilac, but sometimes the white-grounded eggs have only these latter. Some of the pink eggs are strikingly handsome, and remind one of those of Bulbuls. Others are dull coloured eggs, with only a few irregular grey clouds about the large end, thinly interspersed with brownish red spots, usually darker about the centre, and elsewhere excessively minutely and thinly speckled with spots too small to render it possible to say what colour they are.

The eggs vary in length from 27·9 mm. to 29·5 mm. and in breadth from 19·1 mm. to 21·3 mm.

Specimens in the collection :

One egg : Length : 19 mm.
Breadth : 14 mm.
Colour : White with brownish blotches.

Dicrurus ater (Hermann).

(The Black Drongo)

The Black Drongo or Common King Crow breeds throughout India, at any rate in the plains country. It does not appear to breed either in the Himalayas or the Nilgiris at any height exceeding 5,000 feet.

A few eggs may be found towards the close of April and again during the first week of August, but May, June and July are the usual months during which the eggs are laid.

It builds its nest usually pretty high up in tall trees, in some fork, not quite at the outside, constructing a broad, shallow cup, and lays normally four eggs, although occasionally five have been found.

The nest of the King Crow is composed of tiny twigs and fine grass stems, and the roots of the khus-khus grass, as a rule, neatly and tightly woven together, and exteriorly bound round with a good deal of cobweb, in which a few feathers are sometimes entangled. The cavity is broad and shallow, and at times lined with horse-hair or fine grass, but most commonly with khus-khus. The bottom of the nest is very thin, but the sides or rim rather firm and thick.

In shape, the eggs are typically a rather long oval, somewhat pointed towards one end. Very much elongated varieties are common, recalling in this respect, the eggs of *Chibia hottentotta*. Spherical varieties appear to be very rare.

There are two very distinct types of this bird's eggs, the one pure white and spotless, the other a pale salmon colour, spotted with a rich brownish red. But between the dead, glossless, purely white egg and the somewhat glossy, warm, pinkish, ground colour, with numerous well marked spots and specks of maroon colour, dull red and red-brown or even dusky, every possible gradation is found. Each set of eggs in a particular nest, however, seems to be invariably of the same type, and white eggs and coloured eggs with markings, are never found in the same nest.

In the ground colour also, there is every possible variety of shade between pure white and a very rich salmon colour. In the intensity and number of the markings there is an equally great variety. The markings, which are always in the form of spots and specks (the largest never exceeding 0·1 inch in diameter), are invariably most numerous towards the large end, where they are sometimes, though rarely, slightly confluent. They vary from only two or three in number to a very large number, and in colour through many shades of reddish, blackish and purplish brown, the latter being rare and abnormal.

The eggs are entirely devoid of gloss, as a rule, though here and there a slight trace of it is observable. It is this want of gloss alone that distinguishes some of the larger, white, black-spotted varieties from the eggs of the Common Oriole, which they occasionally exactly resemble not only in shape, colour and character of marking, but ev en (though generally smaller) in size.

The eggs vary in length from 22·1 mm. to 29·2 mm., and in breadth from 17·8 mm. to 21·6 mm. ; but the average size of 152 eggs measured is 25·7 mm. × 19·1 mm.

Specimens in the collection :

One egg : Length : 26 mm.

Breadth : 18 mm.

Colour : White, with brownish spots

Family CORVIDAE.

Corvus splendens splendens Vieillot.

(The Common Indian House Crow).

The breeding season of the Common Indian House Crow varies greatly in different localities. Usually it is June and July, but in the greater part of Bengal and in its Eastern parts it breeds in March and April and in Southern and Eastern India the greater number lay in May. In Dacca eggs have been found even in December and January and again in April and May.

The nest is a rough structure composed of sticks lined with smaller twigs and other material. It is commonly placed in the fork of a branch in trees and is usually in the form of a ragged platform of sticks with a central depression lined with grass roots ; other softer materials like wool, rags, grass and all kinds of vegetable fibres are also used in the construction of the nest.

Four eggs are the normal number, but sometimes five and occasionally six eggs are found in the nest. Very rarely, even seven eggs have been found. It is in this bird's nest that the Koel chiefly lays its eggs.

Typically, the eggs are rather broad ovals, a good deal pointed towards the small end ; but rarely the eggs vary very much in shape ; pyriform, elongated and globular varieties are common ; long eggs shaped like those of the Cormorant and perfect ovals are not uncommon. The colour is subject to the same range of variation found commonly in all species of Corvidae. The ground colour is any shade of blue-green and the markings are of dull reddish and brown with secondary markings of grey or neutral colour; usually they are small and irregular in shape and are scattered profusely over the whole egg. In some eggs the ground colour is a very pale pure bluish green, in others it is more dingy and greenish. All eggs are blotched, speckled and streaked more or less with somewhat pale sepia markings, but in some the spots and specks are a darker brown and, as a rule, well defined and there is very little streaking, while in others the brown is pale and muddy, the markings ill defined and the entire surface of the egg is freckled with smudgy streaks. Sometimes the markings are more numerous at the large end, and sometimes at the small end. The eggs are fairly glossy, almost as glossy as the Myna's egg.

On the whole the eggs do not vary much in size. In length they vary from 32·5 mm. to 41·9 mm. and in breadth from 24·9 mm. to 29·2 mm. The average size of 100 eggs measured is reported to be 37·2 mm. × 27·0 mm. (Baker).

Specimens in the collection :

One egg : Length : 37 mm.

Breadth : 26 mm.

Colour : Pale bluish white, profusely marked with greyish and yellowish spots.

In addition to the above mentioned isolated egg, there are two nests in the collection, one with two eggs and the other with four eggs. The measurements of these eggs and nests are furnished below :—

One nest : Diameter : 270 mm.

Height : 220 mm.

Two eggs contained in the above nest :

(I) Length : 38 mm.

Breadth : 27mm.

Colour : Pale green, with brownish patches.

(ii) Length : 36 mm.
Breadth : 26 mm.
Colour : Pale greenish, with brownish patches.

Another nest : Diameter : 340 mm.
Height : 250 mm.

Four eggs contained in the above nest :

(i) Length : 38 mm.
Breadth : 29 mm.
Colour : Pale greenish white, with fine brown spots.

(ii) Length : 39 mm.
Breadth : 30 mm.
Colour : Pale greenish white, with fine brownish spots.

(iii) Length : 37 mm.
Breadth : 28 mm.
Colour : Pale greenish white, with fine brownish spots.

(iv) Length : 38 mm.
Breadth : 29 mm.
Colour : Pale greenish white, with fine brownish spots.

Corvus coronoides levaillanti (Lesson).

(=**Corvus macrorhynchus** Wagler).

(The Indian Jungle Crow).

The Indian Jungle Crow breeds almost everywhere in India both in the plains and in the hills in Southern India as well as in Northern India upto an elevation of 8,000 feet. In the Northern portions of its habitat this species breeds in December to February, but March to May is the normal breeding season and in the plains the majority lay in April and in the hills in May. In Ceylon it breeds in June and July but possibly in other months also.

The nest is a very well made neat cup of small, flexible, twigs compactly built and intermixed with leaves, moss, etc., and well lined with hair, grass or wool. The nest is placed as a rule on good-sized trees high up near their summits, usually away from towns and villages, but occasionally the nests may be found in trees right in the streets of big cities. In the plains mango and tamarind trees seem to be preferred. The nest is large, circular and composed of moderate-sized twigs ; sometimes it is massive, thick and compact, but sometimes loose and straggling. There is always a fairly deep depression in the centre which is smoothly lined with large quantities of horse-hair or other stiff hair, grass, grass-roots, cocoanut fibres, etc. In the hills they use the hair or fur of any animal.

The eggs number four or five normally, rarey six and are quite typical crows' eggs, closely resembling those of the Raven. Almost every variety, as far as colouration goes, to be found among Raven's eggs, are found amongst the eggs of the present species. Like those of the Raven, the eggs of this species exhibit little gloss though here and there a fairly flossy egg is met with. Eggs from various parts of the Himalayas, of the plains of Northern India and of the hills and plains of Southern India do not differ appreciably. But among themselves, the eggs from each locality differ surprisingly in size, in tone of colour and in the character of their markings, but these differences are purely individual variations and are not typical of the particular locality. The eggs are normally dull sap green, blotched with brown. Though smaller, the eggs closely resemble those of the Raven, but they are typically somewhat shorter and broader. Compared with the eggs of the hill species of *Corvus*, the eggs are much smaller and much paler in general tint. In shape also they are, on the average, longer in proportion.

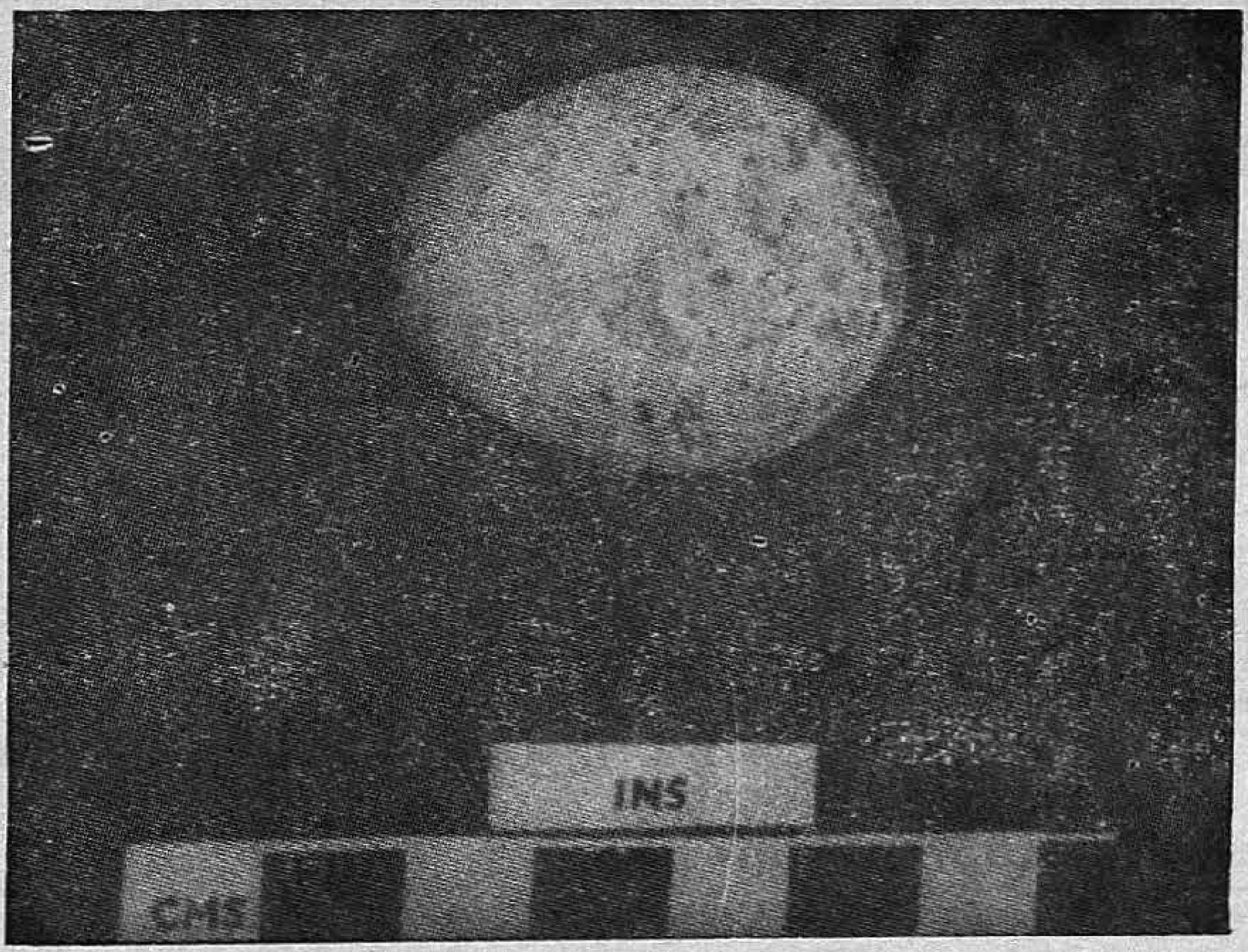

Figure 77. **Corvus splendens splendens** Vieillot
(The House Crow : Egg)

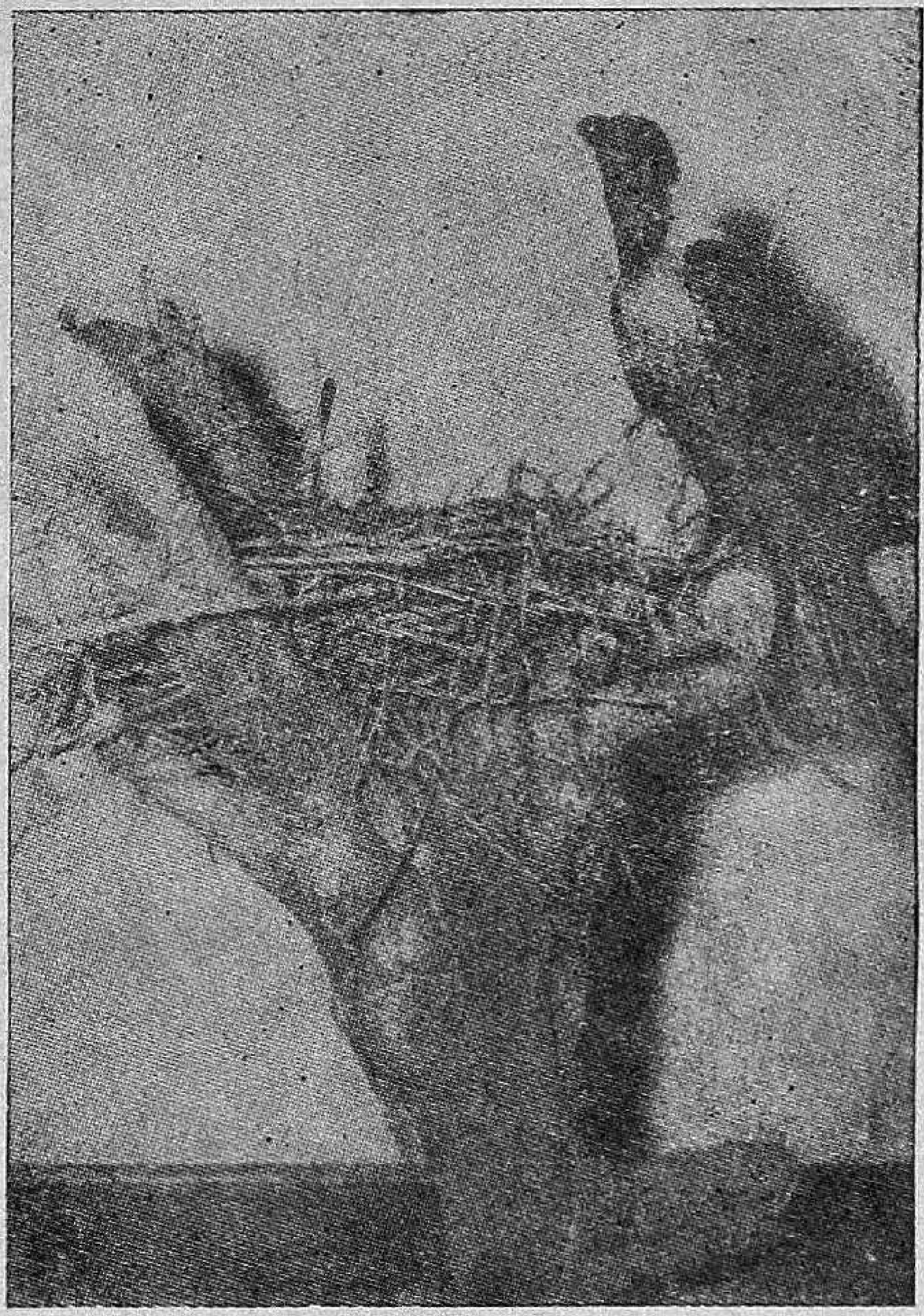

Figure 78. **Corvus splendens splendens** Vieillot
(The House Crow : Nest)

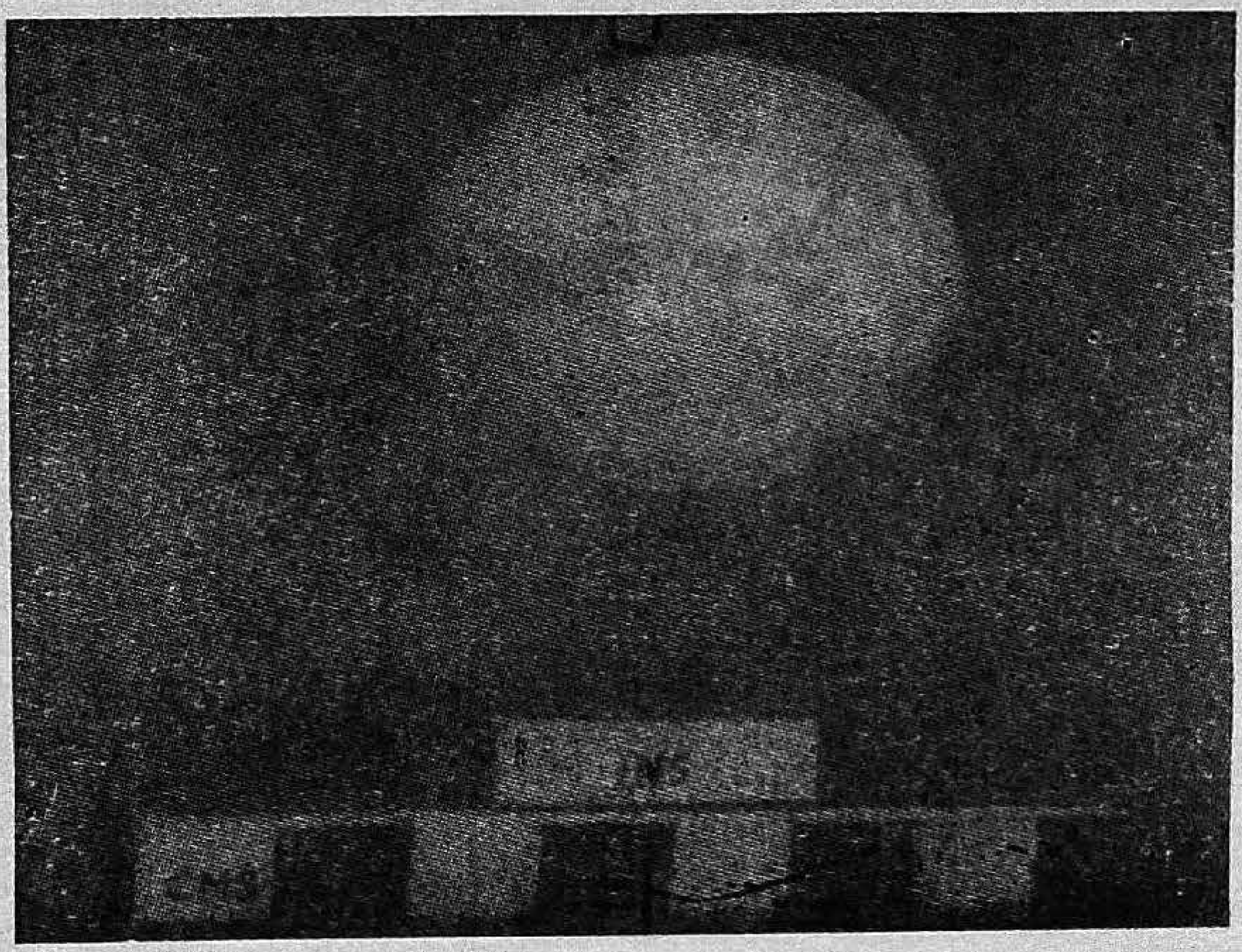

Figure 79. **Corvus coronoides levaillanti** (Lesson)
(The Indian Jungle Crow)

The eggs vary greatly in size, ranging from 38·1 mm. to 49·5 mm. in length and from 28·4 mm. to 31·0 mm. in breadth. The average size of one hundred eggs measured is reported to be 39·6 mm. ×28·9 mm. (Baker)

Specimens in the collection :

One egg : Length : 41 mm.
Breadth : 29 mm.
Colour : White, with greyish patches and spots.

Dendrocitta rufa rufa (Scopoli).

(The Indian Tree Pie).

The Indian Tree Pie breeds throughout the continent of India, alike in the plains and in the hills, up to an elevation of 6,000 or 7,000 feet.

The nest is always placed in trees, generally in a fork, near the top of good, large ones. It is usually built with dry twigs as a foundation, very commonly thorny and prickly twigs being used, on which the true nest, composed of fine twigs and lined with grass roots, is constructed. The nests vary much in size and structure; some are large and loosely put together, and are about 9 inches in diameter and 6 inches in height externally; some are smaller and more densely built, and perhaps not more than 7 inches in diameter and 4 inches in depth. The egg cavity is usually about 5 inches in diameter, and 2 inches in depth, but they vary very much, both in size and materials.

Five is the full complement of eggs, but it is very common to find only four fully incubated eggs.

The eggs are typically some what elongated ovals, a good deal pointed towards the small end. They vary extraordinarily in colour and character, as well as in the extent of their markings, but all the eggs in the same nest closely resemble each other, while the eggs of different nests are almost invariably markedly distinct. There are, however, two leading types—the one in which the markings are bright red, brownish red, or pale pinkish purple; and the other in which they are olive brown and pale purplish brown. In the first type, the ground colour is either pale salmon, or else very pale greenish white and the markings are either bold blotches, more or less confluent at the large end where they are far more numerous, and only a few specks and spots towards the smaller end, or they are spots and small blotches thickly distributed over the whole surface, or they are streaky smudges forming a mottled, ill-defined cap at the large end and running down thence in streaks and spots longitudinally; in the other type, the ground colour is reddish white or salmon-colour with blotches or reddish and dark brown and other secondary underlying markings of lilac and neutral tint. Somtimes the ground colour is greenish white or pale yellowish stone colour, and the character of the markings varies as in the preceding types.

Besides these, there are a few eggs with a dingy, greyish white ground, with very faint, cloudy, ill-defined spots of pale yellowish brown, pretty uniformly distributed over the whole surface.

In 90 per cent of the eggs, the markings are most dense at the large end, where they form irregular, more or less imperfect caps or zones. A few of the eggs are slightly glossy.

The eggs vary in length from 25·4 mm. to 33·0 mm., and in breadth from 19·8 mm. to 24·1 mm.; but the average size of one hundred and fifty eggs measured is reported to be 29·2 mm. × 21·7 mm. (Baker).

Specimens in the collection:

One egg : Length: 30 mm.
Breadth: 23 mm.
Colour: White, with brownish spots.

Dendrocitta rufa vagabunda (Latham).

(The Bengal Tree Pie).

The eggs and nest of this sub-species resemble exactly those of the Indian Tree Pie, *Dendrocita rufa rufa*, and the eggs are also more or less of the same size as those of the latter sub-species. Neither the eggs nor the nest of the two forms can be distinguished from each other.

Specimens in the collection:

Three eggs: (i) Length: 28 mm.
Breadth: 22 mm.
Colour: White, with yellowish brown patches.

(ii) Length: 27 mm.
Breadth: 22 mm.
Colour: White, with yellowish brown patches.

(iii) Length: 27 mm.
Breadth: 22 mm.
Colour: White, with yellowish brown patches.

APPENDIX

DUCKWORTH'S COLLECTION OF BIRDS' EGGS IN THE MADRAS GOVERNMENT MUSEUM.

SYSTEMATIC LIST.

NOTE.—The figures within brackets immediately following the popular names of the birds indicate the number of eggs of the respective species in this collection. Locality records for these specimens are, unfortunately, not available.

ORDER PELECANIFORMES.

Family PELECANIDAE.

Serial number.

1 *Pelecanus philippinus*

(The Spotted Billed or Grey Pelican) (2).

ORDER CICONIIFORMES.

Family ARDEIDAE.

Ardea cinerea
(The Common Heron) (2).

3 *Nycticorax nycticorax nycticorax*
(The Night Heron) (3)

4 *Bubulcus coromandus*
(The Cattle Egret) (1)

5 *Ardetta sinensis*
(The Yellow Bittern) (2).

Family CICONIIDAE.

6 *Platalea leucorodia major*
(The Spoonbill Ibis) (2).

ORDER ANSERIFORMES.

Family ANATIDAE.

7 *Anser indicus*
(The Common Goose) (2)

8 *Anas poecilorhyncha poecilorhyncha*
(The Spotted-billed Duck) (3).

9 *Anas poecilorhyncha zonorhyncha*
(The Manila Duck) (2)

10 *Sarkidiornis melanotus*
(The Common Duck) (1).

11 *Nettapus coromandelicus*
(The Cotton Teal) (2).

ORDER FALCONIFORMES.

Family ACCIPITRIDAE.

Serial number.

12 *Neophron ginginianus*
(The White Scavenger Vulture) (3).

13 *Accipiter* sp. (1)

14 *Spilornis cheela albidus.*
(The Crested Serpent Eagle) (one nest).

15 *Milvus migrans govinda*
(The Common Kite) (2)

16 *Haliastur indus*
(The Brahminy Kite) (1).

ORDER GALLIFORMES.

Family MEGAPODIDAE.

17 *Francolinus francolinus melanotus.*
(The Assam Hill Patridge) (2).

18 *Francolinus pondicerianus*
(The Southern Grey Partridge) (8)

19 *Coturnix coromondelica.*
(The Black-breasted Rain Quail) (4).

20 *Perdicula argoondah.*
(The Rock Bush Quail) (2).

21 *Galloperdix spadicea*
(The Red Spur Fowl) (1).

22 *Galloperdix lunulata*
(The Painted Spur Fowl) (4 normal and 2 abnormal eggs).

23 *Gallus sonnerati*
(The Grey Jungle Fowl) (1).

24 *Pavo cristatus*
(The Pea Fowl) (1).

Family MELEAGRIDIDAE,

25 *Meleagris gallopavo*
(The Common Turkey) (2).

ORDER GRUIFORMES.

Family TURNICIDAE

26 *Turnix joudera*
(The Indian Button Quail) (5).

Family GRUIDE.

27 *Grus antigone antigone.*
(The Indian Sarus Crane) (1).

Family RALLIDAE.

Serial number.

28 *Amaurornis bicolor.*
(Elwe's Crake) (3).

29 *Amaurornis phoenicurus.*
(The White-breasted Water-hen) (4).

30 *Gallinula chloropus indicus.*
(The Indian Moorhen or Water-hen) (3).

31 *Porphyrio porphyrio poliocephalus.*
(The Indian Purple Moorhen) (1).

32 *Fulica atra atra.*
(The Coot) (3).

ORDER CHARADRIIFORMES.

Family JACANIDAE.

33 *Hydrophasianus chirurgus.*
(The Pheasant-tailed Jacana) (5).

34 *Metopidius indicus.*
(The Bronze-winged Jacana) (2).

Family CHARADRIDAE.

35 *Vanellus spinosus duvaucelii.*
(=*Hoplopterus ventralis*).
(The Indian Spur-winged Plover) (1).

36 *Vanellus malabaricus.*
(=Lobipluvia malabarica)
(The Yellow-wattled Lapwing) (1).

ORDER COLUMBIFORMES.

Family PTEROCLIDIDAE.

37 *Pterocles exustus.*
(The Common Indian Sandgrouse) (3).

38. *Pterocles fasciatus.*
(The Painted Sandgrouse) (1).

Family COLUMBIDAE.

39 *Columba livida intermedia.*
(The Indian Blue Rock Pigeon) (2).

ORDER PSITTACIFORMES.

Family PSITTACIDAE.

40 *Psittacula krameri manilensis.*
(The Rose-ringed Parakeet) (3).

ORDER CUCULIFORMES.

Family CUCULIDAE.

Serial number.

41 *Eudynamis honorata.*
(The Indian Koel) (1).

42 *Clamator jacobinus jacobinus.*
(The Pied Crested Cuckoo) (1).

ORDER STRIGIFORMES.

Family STRIGIDAE.

43 *Otus scops rufipennis.*
(The Southern Indian Scops Owl) (2).

44 *Bubo bubo turcomanus.*
(The Large Grey Screech Owl) (2).

ORDER APODIFORMES.

Family APODIDAE.

45 *Collocalia fusiphaga unicolor.*
(The Indian or the Malaysian Edible Nest Swiftlet) (3).

46 *Cypsiurus affinis.*
(The Common Indian House Swift) (2).

ORDER CORACIIFORMES.

Family UPUPIDAE.

47 *Upupa epops ceylonensis.*
(The Indian Hoopoe or Hudhud) (3).

ORDER PICIFORMES.

Family PICIDAE.

48 *Brachypternus bengalensis bengalensis.*
(The Golden-backed Woodpecker) (1).

Family CAPITONIDAE.

49 *Megalaima haemacephala indica.*
(The Indian Crimson-breasted Barbet or Coppersmith) (1, broken).

ORDER PASSERIFORMES.

Family ALAUDIDAE.

50 *Alauda gulgula gulgula.*
(The Indian Skylark) (2).

51 *Mirafra ergaxraptua*
(The Red-winged Bush Lark) (2).

52 *Pyrrhulauda grisea*
(The Black-breasted Finch Lark) (1).

Family HIRUNDINIDAE.

Serial number.

53 *Hirundo concolor concolor.*
(The Dusky Crag Martin) (4).

54 *Hirundo daurica nepalensis.*
(The Red-backed Swallow) (3).

55 *Hirundo smithii filifera.*
(The Indian Wire-tailed Swallow) (3).

Family MOTACILLIDAE.

56 *Motacilla maderaspatensis.*
(The Large Pied Wagtail) (2).

Family PYCNONOTIDAE.

57 *Pycnonotus jocosus fusicaudata.*
(The Southern Red-whiskered Bulbul) (2).

Family IRENIDAE.

58 *Aegithina tiphia tiphia.*
(The Common Iora) (5).

Family LANIIDAE.

59 *Lanius vittatus.*
(The Bay-backed Shrike) (4).

60 *Lanius lahtora.*
(The Indian Grey Shrike) (1).

61 *Hemipus picatus picatus.*
(The Black-backed Pied Shrike) (3).

Family MUSCICAPIDAE.

62 *Copsychus saularis.*
(The Magpie Robin) (2).

63 *Ruticilla rufiventris.*
(The Indian Redstart) (2).

64 *Erithacus brunneus brunneus*
(The Black-breasted Bush Chat) (3).

65 *Turdoides somervillei.*
(The Bombay Babbler) (1).

66 *Turdoides striatus*
(The White-headed Babbler) (3).

67 *Turdoides subrufus.*
(The Rufous Babbler) (1).

68 *Argya cauaata.*
(The Common Babbler) (1).

69 *Malcocercus candidus.*
(The Striated Babbler) (2).

70 *Rhopocichla atrceips bourdilloni*
(Bourdillon's Babbler) (1).

71 *Prinia gracilis.*
(The Streaked or Franklin's Wren Warbler) (4

Family MUSCICAPIDAE—*cont.*

Serial number.

72 *Prinia subflava inornata*
(The Common Wren Warbler) (7).

73 *Prinia sylvaticus*
(The Jungle Wren Warbler) (1).

74 *Prinia socialis socialis*
(The Ashy Wren Warbler) (3).

75 *Acrocephalus fortipes*
(The Reed Warbler) (4).

76 *Rhipidura aureola aureola.*
(The White-browed Fantail Flycatcher) (2).

Family DICAEIDAE.

77 *Dicaeum minimum*
(The Flower Pecker) (1).

Family NECTARINIIDAE.

78 *Arachnechthra asiatica*
(The Purple Honey-Sucker) (4).

79 *Arachnechthra zeylonica*
(The Common Honey-Sucker) (3).

Family ESTRILDIDAE.

80 *Estrilda amandeva.*
(The Indian Red Munia or Waxbill) (5).

Family PLOCEIDAE.

81 *Ploceus baya*
(The Baya or Weaver Bird) (3).

82 *Ploceus manyar*
(The Striated Weaver Bird) (5).

83 *Passer hispaniolensis*
(The Burma Sparrow) (2).

84 *Passer domesticus.*
(The Common House Sparrow) (11).

Family STURNIDAE.

85 *Strunus pagodorum*
(The Black-headed, or Brahminy Mynah) (2).

86 *Sturnus humii*
(Hume's Starling) (3).

87 *Acridotheres ginginianus*
(The Jungle Mynah) (2).

88 *Sturnopastor contra contra*
(The Indian Pied Mynah) (1).

89 *Gracula religiosa*
(The Southern Grackle or Hill Mynah) (2).

Family DICRURIDAE

Serial number.

90 *Dicrurus macrocercus*
(The King Crow or Drongo) (1).

91 *Dicrurus coerulescens*
(The White-bellied Drongo) (3).

Family CORVIDAE.

92 *Corvus splendens*
(The House Crow) (4).

93 *Dendrocitta rufa vagabunda*
(The Indian Tree Pie) (2).

APPENDIX II.

BIRDS' EGGS IN THE REFERENCE COLLECTION OF THE MADRAS GOVERNMENT MUSEUM ACQUIRED IN SEPTEMBER 1954.

FROM THE LATE MR. C. M. INGLIS' COLLECTION
(ACCESSION No. 1954/9).

NOTE :—The figures within brackets immediately following the popular names of the birds indicate the number of eggs of the respective species in this collection.

ORDER PODICIPEDIFORMES

(= PYGOPODES)

Family PODICIPEDIDAE

Serial number.

1 *Podiceps ruficollis capensis*
The Indian Little Grebe or Dabchick (16).
Locality : Baghownie, Darbangha District, North Bihar.

ORDER FALCONIFORMES

Family ACCIPITRIDAE

2 *Spilornis cheela albidus*
The Lesser Serpent Eagle (1)
Locality : Travancore (Kerala).

ORDER GALLIFORMES

Family MEGAPODIDAE

3 *Francolinus francolinus melanotus*
The Assam Black Partridge (8).
Locality : Mornai, Assam.

4 *Francolinus pondicerainus interpositus*
The Northern Grey Partridge (7).
Locality : Samastipur, Darbangha District, North Bihar

5 *Ammoperdix griseogularis griseogularis*
The Seesee Partridge (6).
Locality : Kohat (Rattray).

ORDER GRUIFORMES
Family TURNICIDAE

Serial number

6 *Turnix suscitator taijoor*
(The Common Bustard Quail) (3).
Locality : Rajigiri Estate, Travancore

Family RALLIDAE

7 *Amaurornis phoenicurus*
(The White-breasted Water hen) (24).
Locality : Baghownie, Darbangha District, North Bihar.

8 *Amaurornis bicolor*
(Elwes's Crake) (5).
Locality : Khasia Hills, Assam.

9 *Porzana porzana*
(The Spotted Crake) (5).
Locality : Hungary, Europe.

10 *Porphyrio poliocephalus poliocephalus*
(The Indian Purple Moorhen) (14).
Locality : Baghownie, Darbangha District, North Bihar.

11 *Fulica atra atra*
(The Coot) (12)
Locality : Ulsoor Tank, Bangalore (4);
Surrey (4);
Port Whitley, Surrey (4)

ORDER CHARADRIIFORMES
Family JACANIDAE

12 *Metopidius indicus*
(The Bronze-winged Jacana) (4)
Locality : Baghownie, Darbangha District, North Bihar.

Family BURHINIDAE

13 *Burhinus oedicnemus*
(The Stone Curlew) (2)
Locality : Island off Bagdagara, Malabar.

Family GLAREOLIDAE

14 *Cursorius coromandelicus*
(The Indian Courser) (2)
Locality : Baghownie, Darbangha District, North Bihar

Family CHARADRIIDAE

15 *Charadrius dubius curonicus*
(The European Little Ringed Plover (2)
Locality : Finland, Europe.

16 *Lobivanellus indicus indicus*
The Indian Red-wattled Lapwing (12)
Locality : Baghownie, Darbangha District, North Bihar.

ORDER COLUMBIFORMES
Family COLUMBIDAE

17 *Treron phoenicoptera phoenicoptera*
(The Bengal Green Pigeon) (2)
Locality : Baghownie, Darbangha District, North Bihar.

18 *Streptopelia decaocto decaocto*
(The Indian Ring Dove) (2)
Locality : Jainagar, Darbangha District, North Bihar.

Family PTEROCLIDIDAE

Serial number

19 *Pterocles exustus erlangeri*
(The Common Indian Sandgrouse) (1).
Locality : Kotri, Sind

ORDER CUCULIFORMES

Family CUCULIDAE

20 *Centropus sinensis parroti*
(The Southern Crow Pheasant) (2).
Locality : Poona.

21 *Centropus benghalensis benghalensis*
(The Lesser Coucal or Crow Pheasant) (2).
Locality : Longview Tea Estate, Darjeeling District.

ORDER STRIGIFORMES

Family STRIGIDAE

22 *Tyto alba javanica*
(The Indian Barn Owl or Screech Owl) (2).
Locality : Jainagar, Darbangha District, North Bihar.

ORDER CORACIIFORMES

Family CORACIIDAE

23 *Coracias benghalensis benghalensis*
(The Indian Roller or Blue Jay) (9).
Locality:Baghownie, Darbangha District, North Bihar.

Family UPUPIDAE

24 *Upupa epops orientalis*
(The Indian Hoopoe) (3).
Locality: Baghownie, Darbangha District, North Bihar.

25 *Upupa epops epops*
(The European Hoopoe) (1).
Locality : Europe (exact locality not recorded).

ORDER PICIFORMES

Family PICIDAE

26 *Brachypternus benghalensis benghalensis*
(The Northern Golden-backed Woodpecker) (3).
Locality : Baghownie, Darbangha District, North Bihar.

27 *Brachypternus benghalensis puncticollis*
(The Southern Golden-backed Woodpecker) (1).
Locality : Satpuras.

Family CAPITONIDAE

28 *Xantholaema haemocephala indica*
(The Burmese Crimson-breasted Barbet) (3).
Locality : Baghownie, Darbangha District ,North Bihar.

ORDER PASSERIFORMES.

Family LANIIDAE.

29\. *Lanius vittatus* (The Bay-backed Shrike) (4), Locality : Kulu Valley

Family MUSCICAPIDAE.

30 *Copsychus saularis saularis* (The Indian Magpie Robin) (5). Locality : Narhar, Dabrangha District, North Bihar.

31 *Myiophoneus horsfieldii* (The Malabar Whistling Thrush) (3). Locality : Travancore, (Kerala).

32\. *Turdoides somerville* (The Bombay Babbler) (4). Loality Lanowli, Bombay.

Family STRUNIDAE.

Serial number.

33. *Strunus pagodorum* (The Brahminy or Black-headed Mynah) (2), Locality : Gundlupet, Mysore.
34. *Acridotheres ginginianus* (The Bank Mynah) (11). Locality : Baghownie, Darbangha District, North Bihar.

Family CORVIDAE.

35 *Dendrocitta rufa vagabunda* (The Bengal Tree Pie) (7). Locality : Baghownie, Darbangha District, North Bihar.

APPENDIX III.

BIRDS' EGGS IN THE REFERENCE COLLECTION OF THE MADRAS GOVERNMENT MUSEUM ACQUIRED IN JULY 1955.

FROM THE LATE MR. C. M. INGLIS' COLLECTION.

(*Accession No.* 1955/16).

NOTE.—The figures within brackets immediately following the popular names of the birds indicate the number of eggs of the respective species in this collection.

ORDER CICONIIFORMES.

Family CICONIIDAE.

1. *Pseudibis papillosus* (The Black Ibis) (2), Locality : Lillowl, Darbangha District, North Bihar.
2. *Ibidorhyncha strutherasi* (The Ibis-Bill) (1). Locality : Garhwal (Whymper).

ORDER ANSERIFORMES.

Family ANATIDAE.

3 *Anser indicus* (The Bar-headed Goose) (2) Locality : Tibet.
4. *Anser erythropus*, (The Dwarf or Lesser White-fronted Goose) (2). Locality : Lapland.

ORDER FALCONIFORMES.

Family ACCIPITRIDAE.

5. *Pseudogyps bengalenis* (The Indian White-backed Vulture) (1). Locality :
6. *Circus pygarus* (Montague's Hawk) (3). Locality : South Poland.
7. *Falco peregrinus peregrinus*, (The Peregrine Falcon) (2). Locality : Pomerania.
8. *Astur badius dussumieri* (The Shikra) (3). Locality : Baghownie, Darbangha District, North Bihar.
9. *Pernis cristatus ruficollis* (The Honey Buzzard) (2). Locality : Baghownie, Darbangha District, North Bihar.
10. *Buteo rufinus rufinus* (The Long-legged Buzzard) (4). Locality : Sarepta, South Russia.
11. *Falco tinnunculus tinnunculus* (The European Kestrel) (5). Locality : Pomerania.

ORDER GALLIFORMES.

Family PHASIANIDAE.

12. *Gennaeus hamiltonii* (The White-crested Kalij Pheasant) (9). Locality : Kulu.
13. *Gennaeus hamiltonii* (The White-crested Kalij Pheasant) (3). Locality : Garhwal.
14. *Gennaeus leucomelanota lathami* (The Black-breasted Kalij Pheasant) (7). Locality : Assam.
15. *Lophura leucomelana melanota* (The Fire-backed Pheasant) (4). Locality : Darjeeling.
16. *Lophura leucomelana leucomelana* (The Nepal Kalij Pheasant) (3). Locality : Nepal.
17. *Polyplectron bicalcaratum bakeri* (The Bhutan Peacock Pheasant) (5). Locality : Assam.

Serial number

18. *Lophophorus impeyanus* (The Monal or Impeyan Pheasant) (2). Locality : The Himalayas.
19. *Ithaginus cruentus cruentus* (The Blood-Pheasant) (1). Locality : Gangtok, Sikkim.
20. *Gallus bankvia murghi* (The Common Red Jungle Fowl) (4). Locality : Assam.
21. *Galloperdix spadicea spadicea* (The Red Spur Fowl) (3). Locality : Rookery Estate, Nilgiris.
22. *Galloperdix spadicea stewarti* (The Travancore Red Spur Fowl) (3). Locality : Rookery Estate, Nilgiris.
23. *Pavo cristatus* (The Pea Fowl) (4). Locality : London Zoo.
24. *Coturnix coromandelicus* (The Black-breasted Rain Quail) (5). Locality : Poona.
25. *Coturnix coturnix japonica* (The Japanese Grey Quail) (9). Locality : Japan.
26. *Cryptoplectron erythrorhynchum erythrorhynchum*, (The Painted Bush Quail) (5). Locality : Nilgiris.
27. *Excalfactoria chinensis chinensis* (The Blue-breasted Quail) (8). Locality : Goalpara, Assam.
28. *Perdicula asiatica asiatica* (The Jungle Bush Quail) (3). Locality : Travancore (Kerala.)
29. *Francolinus pictus pictus* (The Southern Painted Partridge) (1). Locality : Dubia.
30. *Arborophila atrogularis* (The White-cheeked Hill Partridge) (4). Locality : Assam.
31. *Arborophila rufogularis rufogularis* (Blyth's or Rufous-throated Partridge) (3). Locality : Assam.
32. *Arborophila torqueola batemani* (Ogilvie-Grants Hill Partridge) (2). Locality : Chin Hills, Burma.
33. *Banbusicola fiytchii hopkinsoni* (Assam Bamboo Partridge) (5). Locality : Assam.

Family TETRAONIDAE.

34. *Tatrao urogallus urogallus* (The Capercaille) (9). Locality : Aberdeenshire, Scotland.

ORDER GRUIFORMES.

Family TURNICIDAE.

35. *Turnix pugnax suscitator* (The Bustard Quail) (2). Locality : Darjeeling.
36. *Turnix sylvatica dussumieri* (The Little Button Quail) (3). Locality : Darbangha District, North Bihar.
37. *Turnix tanki tanki* (The Indian Button Quail) (3). Locality : Hodapsa, Poona District.

Family RALLIDAE.

38. *Crex paratensis* (The Corn Crake) (3). Locality : Not known.
39. *Crex crex* (The Corn Crake) (1). Locality : Ireland.
40. *Amaurornis fuscus bekeri* (The Northern Ruddy Crake) (4). Locality : Assam.
41. *Hypotaenidia striata gularis* (The Blue-breasted Banded Rail) (3). Locality : Assam.

Family OTIDIDAE.

42. *Chlamydotis undulata macqueeni* (The Houbara Bustard) (1). Locality : Altai, Spain.
43. *Sypheotidis indica* (The Lesser Florican) (2). Locality : Satara, Bombay.

ORDER CHARADRIIFORMES.

Family ROSTRATULIDAE.

44. *Rostratula bengalensis bengalensis* (The Painted Sipe) (4). Locality : Kashmir.

Family CHARADRIIDAE.

Serial number.

45. *Lobipluvia malabarica* (=*Sarciophorus malabaricus*), (The Yellow-wattled Lapwing) (3). Locality : Travancore, Kerala.

46. *Hoplopterus duvauceli* (The Spur-winged Plover) (4). Locality : Karch River, Darbangha District, North Bihar.

47. *Charadrius placidus* (The Long-billed Ring Plover) (1). Locality : Fuji, Japan.

Family SCOLOPACIDAE.

48. *Tringa totanus totanus* (The Redshank) (4). Locality : Hungary.

Family GLAREOLIDAE.

49. *Glareol lactea* (The Small Indian Swallow Plover) (4). Locality : Kamla River, Darbangha District, North Bihar.

50. *Cursorius cursor cursor* (The Cream-coloured Courser) (3). Locality ; Fuerta Sentura, Canaries.

ORDER COLUMBIFORMES.

Family COLUMBIDAE.

51. *Crocopus phoenicopterus viridiformis* (The Burmese Green Pigeon) (1). Locality ; Lower Chindwan.

52. *Dendrophassa pompadora affinis* (The Grey-fronted Green Pigeon) (2). Locality : Travancore, Kerala.

53. *Dendrophassa pompadora pompadora* (The Pombadour Green Pigeon) (2). Locality ; Supa, Ceylon.

54. *Dendrophassa pompadora phayrei* (The Assam Gery-fronted Green Pigeon) (2). Locality ; Margherita, Assam.

55. *Treron curvirostra nipalensis* (The Thick-billed Green Pigeon) (2). Locality : North Cachar Hills, Assam.

56. *Sphenoceros sphenurus sphenurus* (The Wedge-tailed Green Pigeon) (2). Locality : Dungagali.

57. *Muscadivora aenea sylvatica* (The Green Imperial Peigon (1). Locality : Assam.

58. *Chalcophaps indica indica* (The Emerald Dove) (2). Locality : Travancore, Kerala.

59. *Streptopelia orientalis erythrocephala* (The Rufous Turtle Dove) (2). Locality ; Dhubia, West Khandesh District.

60. *Streptopelia chinensis suratensis* (The Indian Spotted Dove) (2). Locality : Assam.

61. *Streptopelia orientalis meena* (The Indian Rufous Turtle Dove) (2). Locality : Dungagali.

62. *Oenopopelia tranquebarica tranquebarica*, (The Indian Red Turtle Dove) (2). Locality ; North Bihar.

63. *Columba plumbus casiotis* (The Eastern Wood Pigeon or Ring Dove) (2). Locality ; Murree.

64. *Columba livia livia* (The Blue Rock Pigeon) (2). Locality : Bampton Cliffs, Flambro.

65. *Columba rupestris turkestanica* (The Trukestan Hill Pigeon) (1). Locality ; Kashmir.

ORDER PSITTACIFORMES.

Family PSITTACIDAE.

66. *Psittacula himalayana finschi*, (The Burmese Slaty-headed Paraquet) (4). Locality Popa, Burma.

67. *Psittacula cyanocephala cyanocephala* (The Western Blossom-headed Paraquet) (6) Locality : Jainagar, Darbangha District, North Bihar.

68. *Psittacula himalayana* (=*schisticeps*) *finschi* (The Burmese Slaty-headed Paraquet) (1) Locality : North Cachar Hills, Assam.

ORDER CUCULIFORMES.

Family CUCULIDAE

Serial number.

69. *Cuculus canorus bakeri*, (The Khasia Hills Cuckoo) (6). In the nest of *Cistieola juncidis cursitans.* Locality : Shillong, Assam.

ORDER STRIGIFORMES.

Family STRIGIDAE.

70. *Otus bakkamoena gangeticus* (The United Provinces Collared Scops Owl) (4). Locality : Darbangha District, North Bihar.

ORDER CAPRIMULGIFORMES.

Family CAPRIMULGIDAE.

71. *Lyncornis cerviniceps bourdilloni* (The Great-eared Nightjar) (1). Locality : Travancore.

72. *Caprimulgus indicus indicus* (The Jungle Nightjar) (2). Locality : Nilgiris.

ORDER APODIFORMES.

Family APODIDAE.

73. *Collocalia franciea germaini* (Oustalet's Grey-rumped Swiftlet) (2). Locality : Perak, Federated Malay States.

74. *Apus apus* (The Eastern Swift) (5). Locality : Ludlow, England ; Stemschonola, Bohemia.

ORDER CORACIIFORMES.

Family ALCEDINIDAE.

75. *Ceryle rudis leucomelanura* (The Pied Kingfisher) (5). Locality : Darbangha District, North Bihar.

76. *Alcedo euryzona* (The Broad-zoned Kingfisher) (2). Locality : Malay States.

77. *Halcyon pileata* (The Black-capped Kingfisher) (2). Locality : Wanchei Gap, Hong Kong.

Family MEROPIDAE.

78. *Merops superciliosus javanicus*, (The Blue-tailed Bee-eater) (5). Locality : Karch River, Darbangha District. North Bihar.

Family CORAIICIIDAE.

79. *Coracias bengalensis indicus.*—(The Southern Indian Roller) (2). Locality; Gundelpet, Mysore.

80. *Coracias bengalensis affinis.*— (The Burmese Roller) (2). Locality : Goalpara, Assam.

81. *Coracias garrula garrula.*—(The Kashmir Roller) (3). Locality : Hungary.

ORDER PICIFORMES

Family CAPITONIDAE.

Serial number.

82. *Megalaima viridis.*—(The Small Green Barbet) (3). Locality : Travancore, Kerala.

83. *Megalaima lineata hodgsoni.*—(The Assam Lineated Barbet) (1). Locality : Assam.

84. *Cyanops asiatica rubescens.*—(The Ruddy Barbet) (2). Locality : Khasia Hills, Assam.

85. *Megalaima zeylanicus caniceps.*—(The Northern Green Barbet) (3). Locality : Darbangha District, North Bihar.

86. *Xantholaema rubricapilla.*—(The Crimson-throated Barbet) (1). Locality : Ratnapura, Ceylon.

Family PICIDAE

87. *Dryobates auriceps.*—(The Brown-fronted Pied Woodpecker) (5). Locality : Naini-Tal.

88. *Picus chlorolophus chlorolophus.*—(The Eastern Himalayan Small Yellow-naped Wood-packer) (1). Locality : Assam.

89. *Picus vittatus viridianus.*—(The Burmese Slaty-bellied Woodpecker) (1). Locality : Arakan, Burma.

90. *Picus squamatus squamatus.*—(The Scaly-bellied Green Woodpecker) (5). Locality : Dungagali (Rattray).

91. *Dryobates nanus canicapillus.*—(The Burmese Pigmy Woodpecker) (3). Locality : Khasia Hills, Assam.

92. *Hypopicus hyperythrus hyperythrus.*—(The Eastern Rufous-bellied Woodpecker) (2). Locality : Dungagali (Rattray).

ORDER PASSERIFORMES

Family PITTIDAE.

93. *Pitta brachyura brachyura.*—(The Indian Pitta) (5). Locality : Jamalpur.

94. *Pitta sordida cucullata.*—(The Green-breasted Pitta) (5). Locality : Murphulani, Assam

Family ALAUDIDAE

95. *Galerida cristata chendoola.*—(The Crested Lark) (7). Locality : North Bihar.

Family HIRUNDINIDAE

96. *Hirundo fluvicola.*—(The Indian Cliff Swallow) (3). Locality : Unknown.

Family MOTACILLIDAE

97. *Motacilla citreola calcarata.*—(The Yellow-headed Wagtail) (3). Locality ; Hokra Jheel.

Family LANIIDAE

98. *Lanius schach erythronotus.*—(The Rufous-backed Shrike (5). Locality : Morar, Gwalior.

Family MUSCICAPIDAE

Sub-family TURDINAE

Serial number.

99. *Grammatoptila striata austeni.*—(Austen's Striated Laughing Thrush (3). Locality : Khasia Hills, Assam.

100. *Dryonastes ruficollis.*—(The Rufous-necked Laughing Thrush) (2). Locality : Longview T.E., Darjeeling).

101. *Geokichla sibirica.*—(Davison's Ground Thrush) (4). Locality : Hondo, Japan.

102. *Geokichla citrina andamanensis.*—(Andaman Ground Thrush) (2). Locality : Andamans.

103. *Monticola rufiventris.*—(The Chestnut-bellied Rock Thrush) (1). Locality : Darjeeling.

104. *Myiophoneus coeruleus eugeni.*—(The Burmese Whistling Thrush) (4). Locality : Chin Hills, Burma.

105. *Trochalopterum lineatum griseicentior.*—(The Simla Streaked Laughing Thrush) (2) Locality : Chongla gali.

106. *Trochalopterum lineatum griseicentior.*—(The Simla Streaked Laughing Thrush) (2). Locality : Dagshai.

107. *Trocholopterum variegatum simile.*—(The Variegated Laughing Thrush) (2). Locality : Chongla gali.

108. *Trochalopterum erythrocephalum chrysopterum.*—(The Shillong Yellow-winged Laughing Thrush)(2). Locality : Shillong.

109. *Garrulax leucolophus diardi.*—(The White-crested Laughing Thrush) (4). Locality : Perak.

110. *Statocichla merulina merulina.*—(The Spotted-breasted Laughing Thrush) (1). Locality : Hunguni-, North Cachar, Assam.

111. *Turdus unicolor.*—(Tickell's Thrush) (2). Locality : Changla gali, Murree.

112. *Turdus simillinus simillinus.*—(The Nilgiris Black Bird) (9). Locality : The Nilgiris.

113. *Turdus feae.*—(Feae's Ouzel) (3). Locality : Fiji, Japan (1). Khasia Hills, Assam (2).

114. *Turdus merula maximus.*—(The Central Asian Black bird) (1). Locality : Upper Teesta Valley.

115. *Turdus albocinctus.*—(The White-collared Blackbird (3). Locality : Garhwal..

116. *Turdus boulboul boulboul.*—(The Grey-winged Blackbird) (1). Locality -: Gangtok, Sikkim.

117. *Saxicoloides fulicata fulictata.*—(The Black-backed Indian Robin) (7). Locality : Poona.

118. *Saxicoloides fulicata cambaiensis.*—(The Indian Robin) (3). Locality : Lucknow.

119. *Phoenicurus ochrurus phoenicuroides.*—(The Kashmir Redstart) (2). Locality Parkachik, Suru Valley.

120. *Phoenicurus auroreus.*—(The Daurian Redstart) (6).

121. *Phoenicurus erythronotus.*—(Eversmann's Redstart) (5). Locality : Issikul.

122. *Cyanosilvia suecica suecica.*—(The Western Red-spotted Blue-Throat) (5). Locality : Valkenswaard., Holland.

123. *Enicurus maculatus maculatus.*—(The Western Spotted Forktail) (3). Locality: Dungagali.

124. *Enicurus maculatus guttatus.*—(The Eastern Spotted Forktail) (3). Locality : Margherita, Assam.

125. *Luscinia (Daulias) megarhyncha golzii.*—(The Turkestan Nightingale) (1). Locality: Issikul.

126. *Luscinia cyanea.*—(The Blue Chat) (5). Locatity : Sabarhiri, Mount Fuji, Japan.

127. *Sazicola carpata nilgiriensis.*—(Pied Bush Chat) (7). Locality : Nilgiris.

128. *Oenanthe pleschenki.*—(The Pied Chat) (4). Locality : Altai.

129. *Oenanthe (Saxicola) isabellina.*—(The Wheatear) (4). Locality : Volga, South Russia.

130. *Oenanthe deserti oreophila.*- (The Tibetan Desert Chat) (3). Locality : Taklang Pass Ladakh.

Sub-famliy TIMALIINAE.

Serial number.

131. *Turdoides griseus griseus.*—(The White-headed Babbler) (4). Locality : St. Thomas Mount, Madras.

132. *Pomatorhinus horsfieldi travancorensis.*—(The Southern Indian Scimitar Babbler) (2 Locality : Kotagiri, Nilgiris.

133. *Pomatorhinus horsfieldi melanurus.*—(The Ceylon Scimitar Babbler) (2). Locality : Kandy, Ceylon.

134. *Pomatorhinus ochraceiceps stenorhynchus.*—(Austen's Scimitar Babbler) (2). Locality : North Cachar Hills, Assam.

135. *Pomatorhinus erythrogenys macclellandi.*—(Macclelland's Scimitar Babbler) (2). Locality : Margherita, Assam.

136. *Pomotarhinus ferruginosus phayrei.*—(Phayre's Coral-billed Scimitar Babbler) (2). Locality : North Cachar Hills, Assam.

137. *Argya gularis.*—(The White-throated Babbler) (4). Locality : Myingyan, Burma.

138. *Argya caudata caudata.*—(The Common Babbler) (3). Locality : Morar, Gwalior.

139. *Pellorneum (Drymocataphus) tickelli assamensis.*—(the Spotted Babbler) (3). Lo cality : Margherita, Assam.

140. *Pellorneum ignotum ignotum.*— (the Assamese Babbler) (3). Locality: Margherita, Assam

141. *Pellorneum ignotum cinnamomeum.*—(Rippon's Baler) (1). Locality : East Kachin Hills.

142. *Babax lanceolatus lanceolatus.*—(The Chinese Babax) (2). Locality : Sinbum, Bhamo Burma.

143. *Babax lanceolatus woodi.*— (Wood's Babax) (2). Locality : Chin Hills, Burma.

144. *Leioptila gracilis.*— (the Grey Sibia) (3) Locality : Khasia Hills, Shillong, Assam.

145. *Actinodura egertoni egertoni.*—(The Nepal Bar-wing) (3). Locality : Khasia Hills, Assam.

146. *Paradoxornis guttaticollis.*—(Austen's Parrot-bill) (3). Locality : Margherita, Assam.

147. *Paradoxornis flavirostris.*—(Gould's Parrot-bill) (2). Locality : Guilang, North Cacher Hills, Assam.

Sub-family SYLVINAE.

148. *Napothera (Turdinulus) roberti roberti.*—(Austen's Wren Warbler) (3). Locality : Margherita, Assam.

149. *Seicercus poliogenys.*—(The Grey-cheeked Flycatcher Warbler) (1). Locality : Margherita, Assam.

150. *Tribura major.*—(The Large-billed Bush Warbler) (2). Locality : Kargil.

151. *Phylloscopus collybitus subindianus.*—(The Chiff-chaff) (6). Locality : Gompa (4) Lamayarn, Ladakh (2).

Sub-family MUSCICAPINAE.

152. *Muscicapula pallidipes.*—(The White-bellied Blue Flycatcher) (3). Locality : Travancore, Kerala.

153. *Eumyias albicaudata.*—(The Nilgiris Blue Flycatcher) (4). Locality : Nilgiris.

154. *Ochromela nigrorufa.*—(The Black and Orange Flycatcher) (1). Locality : Unknown.

Family PARIDAE.

155. *Parus major mahrattensis.*—(The Southern Grey Tit) (5). Locality : Nilgiris.

156. *Machlolophus spilonotus spilonotus.*—(The Yellow-cheeked Tit) (3). Locality : Khasia Hills, Assam.

Family SITTIDAE.

157. *Sitta leucopsis leucopsis.*—(The Chestnut-billed or White-cheeked Nuthatch) (5). Locality: Meenjani.

Family DICAEIDAE.

Serial number.

158. *Piprisoma agile agile*, (The Thick-billed Flower-pecker) (3). Locality : Darbangha District, North Bihar.

159. *Dicaeum minullum concolor*, (The Nilgiri Flowerpecker) (2). Locality : Palni Hills.

Family NECTARINIIDAE.

160. *Cynniris asiatica asiatica*, (The Purple Sunbird) (2). Locality : North Bihar.

161. *Cynniris* (=*Leptocoma*) *zeylonica*, (the Purple-rumped Sunbird) (2). Locality : St. Thomas' Mount, Madras.

162. *Cynniris* (= *Leptocoma*) *flammaxillaris andamanica*, (the Andaman Sunbird) (2). Locality : Andamans.

163. *Cynniris* (= *Leptocoma*) *lotenia*, (Loten's Sunbird) (2). Locality : Ceylon.

164. *Aethopyga gouldiae gouldiae*, (The Yellow-backed Sunbird) (1). Locality : North Cachar Hills, Assam.

165. *Arachnothera magna magna*, (The Indian Streaked Spider Hunter) (1). Locality : Margherita, Assam.

Family DICRURIDAE.

166. *Dicrurus leucophaeus hopwoodi*, (The Assam Grey Drongo) (4). Locality : Assam.

Family CORVIDAE.

167. *Dendrocitta formosae assimilis.* (The Burmese Hill Tree Pie) (2). Locality : Port Blair, Andamans.

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